



FRIDAY, SEPTEMBER 14.

## German Four-Wheeled Tank Locomotive.

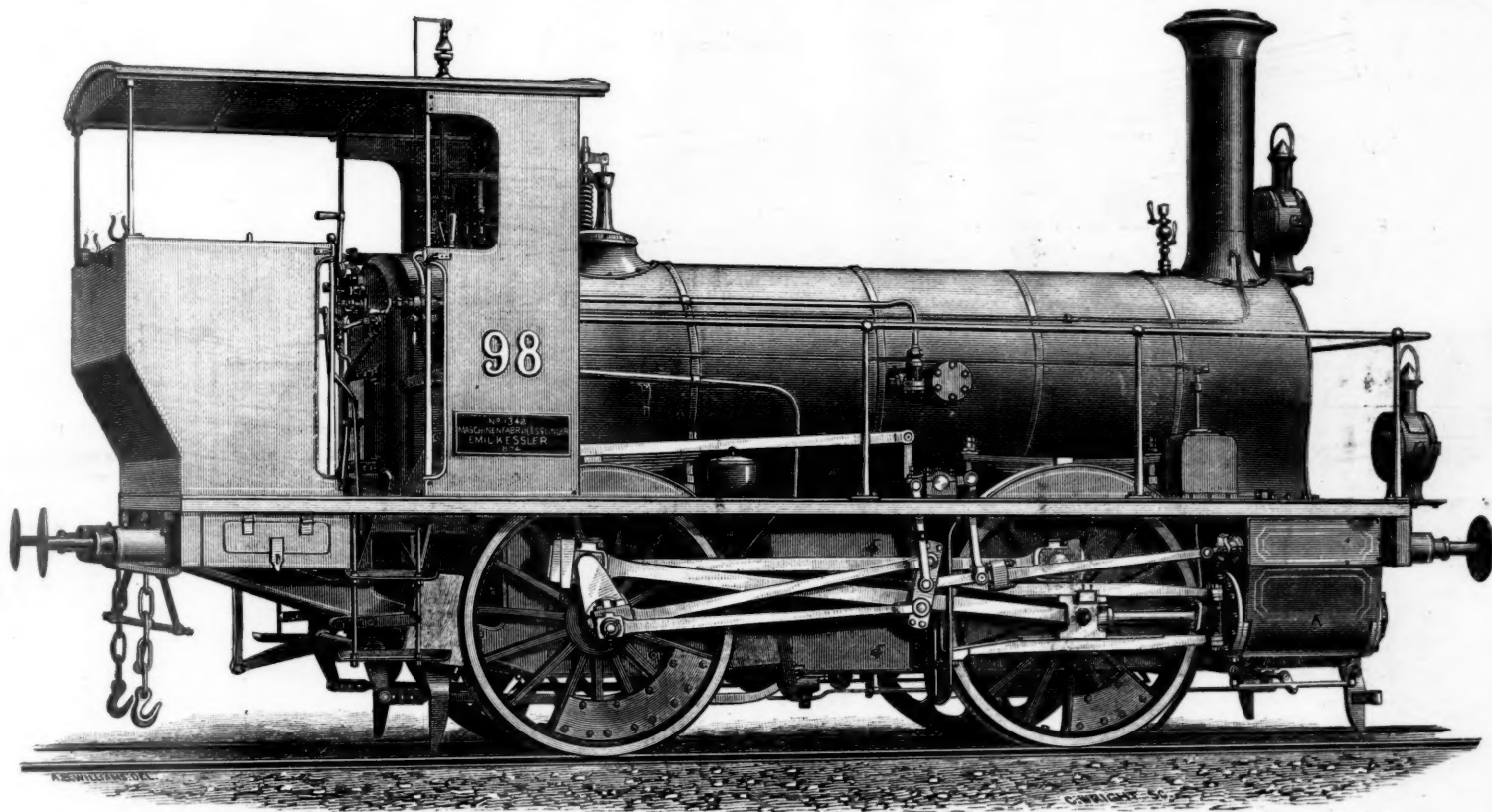
The accompanying engraving represents a four-wheel coupled tank locomotive built by the Esslingen Machine Works at Esslingen, Germany, for the Swiss Northeastern Railroad. The principal dimensions are as follows:

	Metres.	Ft.	Inches.
Cylinders, diameter.....	0.320 =	1	0.60
" stroke.....	0.800 =	1	11.82
Diameter of driving wheel.....	1.390 =	4	6.73
Wheel base.....	2.500 =	8	2.43
Fire-box, length.....	1.200 =	3	11.25
" width.....	0.930 =	3	0.92
" depth.....	1.223 =	4	0.15
Grate surface.....	1.11 sq. metres =	11.95	sq. ft.
Number of tubes.....	0.050 m. =	1.97	in.
Diameter of tubes.....	3.015 m. =	9 ft. 10.60	in.
Length.....	5.16 sq. metres =	55.54	sq. ft.
Heating surface, fire-box.....	63.95	=	688.36
" tubes.....	69.11	=	743.90
Total heating surface.....			

The tank, which has a capacity of 2.68 cubic metres (about 708 gallons), is carried under the boiler between the frames, making it necessary to place the valve motion outside, as shown in the engraving.

The testimony of George Whittleton, however, a farmer and resident of the neighborhood, and the person for whom the car was intended, was that it was left at a point about 1,030 ft. from the point of junction of the two tracks. In any case the car could not have moved less than about 700 ft. from its original position to where it was at the time of the collision. The switch was turned off the main track, as was sworn to by J. L. Boynton, the engineer of the first locomotive, who examined it immediately after the accident. The car, therefore, must have run off the rails of the side track on to the ties of the main track and a distance of at least its own length, by reason of the impetus it had received when leaving the rails. The engineer testified that the engine struck it square on its west end, which is corroborated by the equal bending of the two bars on each side of the front part of the locomotive, which bars probably received the first blow. The car could have only got to the position above described in one of two ways: First, by having been maliciously placed there; or, second, by having been blown there. There was not the slightest testimony developed to show the first, so the second is the only tenable theory. There is much testimony that just before and about the time of the accident there was a strong wind blowing from a westerly direction. The track-walker of the company, Alfred Perry, who left the station about 8 p. m., to walk to the west end of his beat, swears that he sat down to avoid the force of the wind. Dr. S. R. Cochrane, the coroner, a gentleman of high intelligence and trustworthiness, states that he was out driving about the time, and the wind was violent. There is much more testimony to the same effect, and more of a contradictory nature. The grade of the side-track from levels carefully taken since the accident shows that from the point where the car was probably standing, the track is practically level for 150 ft.; then comes a rise of 0.3 ft. in 20 ft.; it is then practically

This would have been exerted by a brisk wind with a velocity of 20 to 25 miles an hour, and a pressure of three pounds to the square foot. The testimony as to whether the brakes were set is as follows: The conductor of the freight train, Daniel Cronan, who left the car on the morning of July 26, states, that he saw Marvin, a brakeman, on the car at the brake wheel and thinks that he must have set it or the car would have gone farther than it did. His statement is corroborated by that of two brakemen on the same train, and by Wm. Barry, the station agent, all of whom state they saw the brakeman on the car, but each one admits that he had not examined the brakes himself. George Whittleton states that he examined the brakes so far as to see that the chain from the brake lever to the rod was taut, but did not test it with his hands or feet. It is rather a curious fact, however, that Marvin, the brakeman, who is sworn to have set the brakes by numerous witnesses, forgets whether he did or not, and could not remember anything about leaving the car at the station on the morning in question. Under the closest cross-examination he reiterated his entire forgetfulness of the whole transaction. It appeared that this was only his third trip over the road. Unfamiliar with the localities, it is possible that the circumstances of leaving the car at this station may have entirely escaped his memory. If he remembered that he had not set the brakes, it was as much perjury to swear that he did not remember as to swear he had set them. There was nothing alleged against his character, although nothing was known particularly in his favor. It is but fair to assume that his testimony was to the best of his knowledge. The printed rules of the company state as follows: "The station agents will be held responsible for the proper position and security of their switches, and the cars on their side tracks. Before leaving the station at night they must see that all standing cars are out of the way



GERMAN FOUR-WHEELED TANK LOCOMOTIVE.

## The New York Railroad Commission on the Carlyon Accident.

We give below in full the report of the New York Railroad Commission on the accident at Carlyon, on July 27 last. It is of special interest both from the gravity of the accident and the fact that it is the first investigation and report made by the Commission on any accident of importance:

In the matter of the accident at Carlyon Station, on the Rome, Watertown & Ogdensburg Railroad, July 27, 1888, by which 17 people were killed and between 30 and 40 injured.

The facts and circumstances attending the above accident, as developed by testimony taken before a coroner's jury and Commissioner Rogers at the scene of the disaster, are as follows:

The regular evening train left Niagara Falls at 7:30 p. m., being about 20 minutes late. It was unusually heavy, having some 350 passengers, principally excursionists for the Thousand Islands; and consisted of two engines, one baggage car, one day coach and nine sleeping cars, the last six being Wagner coaches. The train was in charge of Conductor E. Garrison. Train Dispatcher W. H. Chauncey, however, was also on board, and on the leading engine at the time of the collision. The night was dark, rainy and a high wind blowing from the west. All went well until the train, moving at 25 or 26 miles an hour, reached Carlyon Station, when suddenly it collided with an empty freight car standing on the main track. The leading engine, after moving on a short distance, was thrown over on the north side of the track; the second engine was thrown over on the other side, killing almost instantly the engineer and fireman. The following cars piled up in terrible and deadly confusion, killing outright 17 people and injuring more or less seriously 40 others. All the circumstances attending this appalling disaster and bearing upon it have been examined with great care, and the results reached by the board are given. The freight car which was the immediate cause of this accident was left on the side track Thursday morning, July 26, about 6:30 a. m. The testimony of the conductor of the freight train who left it, of two brakemen on the same train, of the station agent, and of two or three others was to the effect that it was left at a point on the side track about 750 ft. from the point of junction with the main track.

level for 125 ft.; then a gradual descent of  $1\frac{1}{4}$  ft. in 200 ft.; then a gradual ascent of  $\frac{3}{4}$  ft. in 200 ft., from which point to the point of junction with the main track it is level. Had the brakes been properly set, the question arises as to whether the wind was strong enough to have blown the car along the track. Since the accident experiments have been conducted, under the supervision of a member of the board, for the purpose of determining this question as nearly as possible. Superintendent Bissel, of the New York Central & Hudson River Railroad, kindly put an empty freight car and locomotive at the disposal of the commissioner. Prof. P. H. Dudley supplied a dynamometer with which the tests were made. The dynamometer is substantially a strong spring scale, which is put between the draw-head of the car and locomotive, and registers the traction, either directly in pounds or in hundredths of an inch, afterward reduced to pounds. It was shown that the traction necessary to start and move an empty box freight car weighing 20,500 pounds, with the brakes set so as to keep the forward trucks from turning, and the other conditions as nearly similar as possible to those incident to the car in question at the time of the accident, was about 2,000 pounds. The surface exposed by the end of an ordinary car of the above description, including the trucks, etc., is about 85 square feet. (The exact measurement of the car in question could not be obtained, as it had been burned.)

A wind, therefore, sufficient to have moved this car would have had to exert a pressure of  $23\frac{1}{2}$  pounds to the square foot. A pressure of this amount, according to Smeaton's tables (Trautwine Eng. P. E., p. 120) is exerted by a wind about half way between a violent storm and a hurricane blowing with a velocity of between 60 and 80 miles an hour. Such a wind would produce considerable damage to growing crops, houses and trees. The evidence of George Whittleton and several others was that no particular damage had been produced by the wind on the night in question. We are, therefore, led to the conclusion that the wind at that night was not strong enough to have blown this car along had the brakes been properly set. This conclusion is corroborated by the testimony of H. M. Britton, the General Manager of the Rome, Watertown & Ogdensburg Railroad, who stated under oath, and speaking as an expert, that in his opinion the wind was not strong enough to have blown that car had the brakes been set as he could set them. If the brakes were entirely loose, however, a pressure of 300 pounds would have been sufficient to move the car.

and secured against the possibility of their being blown out on the side track."

Wm. A. Barry, the station agent, admits that he knew of this rule, but says that he had not examined the brakes since he first saw them set, and that he left on the night of the 27th at 7 p. m., without taking the precautions required by the company. He was clearly to blame in this, although it is only fair to assume that he had no appreciation of the fact that his apparently slight negligence might lead to such frightful results. It is an illustration of the necessity of impressing upon railroad employees that they must obey the rules of the company to the letter in all matters affecting the safety of the operation of the road, whether such rules appear to them unnecessary or not. While many such acts of negligence may, and probably do, often happen, without discovery, serious results to the traveler, or punishment to the employee, when loss of life is the consequence the only safe rule looking to the protection of the public and maintenance of discipline on the road is to discharge the employee. While Barry bears a good reputation for integrity and sobriety, we feel that his retention under the circumstances would be a bad example and subversive of discipline hereafter. It appeared that there were no air brakes on this train and that they are not in use on the Rome, Watertown & Ogdensburg Railroad. H. M. Britton, the General Manager, however, states that it was the intention of the company to equip all the passenger rolling stock with them; that orders had been given before the accident to put them on the locomotives and six cars. It is proper to state that the present President and General Manager had held their respective positions but a few weeks before the accident. The engineer of the leading locomotive states that he first saw the car standing on the main track about four rods ahead; blew for brakes and reversed his engine. Just before the collision the fireman had opened the grate door to put in coal. The bright light dazzled the engineer's eyes for a moment, so that probably he did not see the car as soon as he would have but for this fact. He is to be commended in the highest terms for his courage, presence of mind and the performance of duty in the face of danger. He states that he could not have stopped the train if he had had air brakes; but it is our opinion that the violence of the blow, the subsequent momentum of the rear cars of the train and the extent of damage to life and property would have been greatly diminished by their use. The position of the cars in the wreck after the collision was as follows: The box car



was lying on the north side of the track; the leading engine on its side directly behind it; the second engine bottom side up on the south side of the track, pointed at an angle of about 45 degrees; the baggage car "20" was lying full length on top of the second engine, and was broken in two; coach "55" was at an angle of 45 degrees on the track and was run through the middle by the sleeping car "DeKalb." Sleeping car "DeKalb" was cut down by No. "55." The next sleeping car, "Ontario," was "telescoped" by the one on the rear, "St. Lawrence." The six Wagner sleeping cars in the rear were not much damaged, except the forward one, by striking the sleeping car "St. Lawrence." It appears, therefore, that the great weight and momentum of the cars in the rear hurled the leading cars together and on top of one another in the manner described. In collisions of this nature, the damage to the forward cars is, to a great extent, proportionate to the number and weight of the cars on the rear. The conclusion to be drawn under this head is, that it is unwise and unsafe to draw passenger trains so heavy as to require two locomotives, unless equipped with air brakes. With this device, the momentum can be almost instantly checked. Where the number of passengers is such as to require a train of this length, it is better to divide it into sections, following each other at a safe distance, taking great care to give information ahead that the train is thus divided. From the testimony of H. M. Britton, it appears that the track-walker walks but twice over the track in a day. He starts from the east end of his beat about 1 p. m., walks to the west end, a distance of six miles, meeting the east-bound passenger train; he follows this train back to the east end of his beat, arriving at 12 p. m., and sees that all is clear for the passage of the early morning passenger train to the west, which passes over this particular beat between 4 and 5 o'clock in the morning. Between 12 o'clock at night and 1 o'clock in

of bridge as erected and also its condition after cyclone had destroyed it.

This storm seems to have developed a new danger in railroad operations, and one against which as yet neither science nor experience seems to offer any safeguard.

Only some four or five minutes' time elapsed between passage of storm which destroyed bridge and the arrival of train. Had the latter been on the bridge a few minutes sooner, it would seem that the entire destruction of the train, as well as of the bridge, must have occurred, the results of which it would be impossible to estimate.

I give you the facts, and you can put them in such shape, if you desire, as will prove of interest to your readers, and possibly throw some light upon similar occurrences of this nature.

E. B. THOMAS, General Manager.

CLEVELAND, O., June 6, 1883.

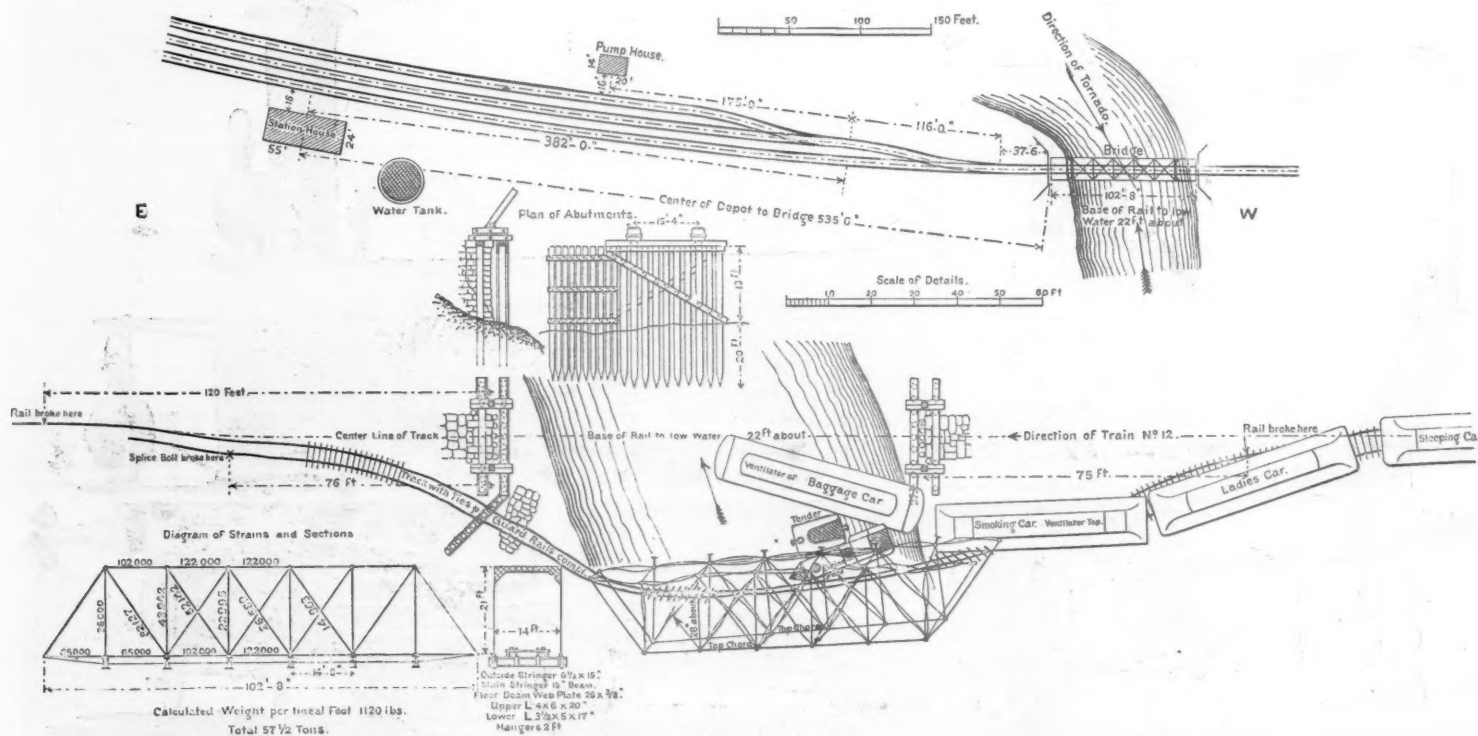
E. B. THOMAS, General Manager.

DEAR SIR: Herewith is submitted to you a report of the disaster at Hillsboro' on the night of May 18, and, owing to its being so unusual and violent, a great deal of care has been taken to get together a detail of the facts connected therewith, and for this purpose Messrs. Irwin and Reuschel were requested to make measurements, and give the position of the structure, track and surroundings, both before and after the occurrence, and all other details needed for a full and concise report and record, which has been done, and is now handed to you.

ning, when suddenly, at 9:55 p. m., Mr. A. H. Brown, who was attending depot, heard a loud rumbling sound similar to an approaching freight train, then a rattling on the windows like shot striking them, followed by door of depot blowing violently open. This lasted for only a moment, seemingly, when, stepping out on the platform, he heard No. 12 whistle for station. He went back into office to get letters for train, and on his way out heard engine whistle for brakes. Hastening toward bridge he found it gone and train in creek.

By referring to drawing you will see that bridge lies nearly upside down on northerly side of abutments, with locomotive partly underneath, tender turned end for end, baggage car front end near middle of creek, other end up on bank opposite west bridge seat, smoking car in rear of baggage car, ladies' car back of that, and sleeper on track.

The bridge was a through Whipple truss, single intersection, 102 ft. 7 in. long centre to centre of end pins, weighing 57½ tons unloaded, ties spaced 4 in. apart, oak guard-rail 6 x 8 notched on ties and bolted to every fourth one. Track was steel rail 60 lbs. per yard, fastened with angle-bars, thus forming a strong anchorage. Was built and erected by Cleveland Bridge & Car Works, January, 1882, fully up to bridge specifications of Indianapolis & St. Louis Railway, which are very exacting in their requirements, calculated to carry two consolidation engines shackled together, aggregating in weight 80 tons each (engine and tender); also a wind strain of 550 lbs. per running foot, 350 lbs. of which to be



WRECK OF BRIDGE AND TRAIN ON THE INDIANAPOLIS & ST. LOUIS ROAD NEAR HILLSBORO, ILL.

the afternoon of the next day, there appears to be no regular inspection of the track, except such as may be given by the section boss, although in the meantime, three passenger and two freight trains move over it. It seems to us that it would be safe for the section boss to go at least once over the entire track as soon as he goes on duty in the morning.

#### CONCLUSIONS.

In conclusion, the Board is of the opinion that William A. Barry, the station agent at Carlyon, is censurable for not having complied with the printed rules of the company, which made it his duty to see that the car on the side track was secured against the possibility of being blown on to the main track before leaving the station at night, and should be discharged.

Second, The Rome, Watertown & Ogdensburg Railroad Co. was at fault for running so heavy a train at night, propelled by two engines. There ought to have been two trains following each other at safe intervals. Even with air brakes a "double-header" ought not to be run, unless connections are so made as to enable the forward engine to apply the brakes.

Third, The Board recommends that all passenger coaches and engines be equipped with automatic air brakes; that the track be inspected more frequently; that the road direct its attention toward the adoption of a safety switch, which shall prevent the accidental return to the main track of cars switched therefrom.

By the Board.

WM. C. HUDSON, Secretary.

#### Contributions.

##### Wreck of a Bridge by Wind.

Cleveland, Columbus, Cincinnati & Indianapolis and Indianapolis & St. Louis Railway Companies.  
CLEVELAND, O., June 6, 1883.

TO THE EDITOR OF THE RAILROAD GAZETTE:

The destruction on May 18 of our Hillsboro' bridge and consequent wreck of passenger train, with death of both engineer and fireman, occurred under such unusual circumstances that I have thought detailed information of the cause might not be without interest to the readers of your paper. I, therefore, inclose you the report of our Chief Engineer, Mr. Beach, and of his Bridge Engineer, Mr. Irwin, together with a blue print showing plan and strain-sheet

It was found that the whirling or rotating motion was the reverse of the movements of the hands of a watch laid face upward, or from right to left with the line of passage, and with sufficient force to raise the bridge and track vertically and carry it in the line of progress an average distance of 23 ft., and to the left of the line of progress 16 ft.

Wm. C. Redfield, in numerous papers upon the phenomena of storms, published in 1831, and continuing over a period of twenty-five years in the *American Journal of Science*, estimated that near the axis of the spiral whirls a wind velocity of 300 miles an hour has been obtained, and that the progress of hurricanes was at a variable rate of from four to 44 miles per hour, usually about 30 miles.

Elias Loomis in his treatise on Meteorology recites that a very destructive tornado occurred in Northern Ohio, Feb. 4, 1842, line of progress N. 33° E., with a velocity of 34 miles per hour.

The velocity in the line of progress it would seem was very great to carry such a weight the distance given, and possibly much greater than that given by Redfield and Loomis, the general course being northeasterly. Very respectfully,

G. M. BEACH,

General Road-Master.

CLEVELAND, O., June 4, 1883.

G. M. BEACH, G. R. M.

DEAR SIR: On Friday, May 18, 1883, at 10 p. m., the iron bridge over Shoal Creek at Hillsboro' Station was blown over, and passenger train No. 12, from St. Louis to Cleveland, ran into the creek, killing engineer and injuring fireman, who subsequently died, they being the only persons hurt.

Pursuant to instructions, in company with Wm. Reuschel, of the Engineer's Department, and Mr. Maxwell, Superintendent of Bridges, I made an examination of this accident, and, in connection with accompanying drawing, would submit following report:

The evening preceding was not marked by any unusual disturbances, light showers of rain with thunder and light-

ning, when suddenly, at 9:55 p. m., Mr. A. H. Brown, who was attending depot, heard a loud rumbling sound similar to an approaching freight train, then a rattling on the windows like shot striking them, followed by door of depot blowing violently open. This lasted for only a moment, seemingly, when, stepping out on the platform, he heard No. 12 whistle for station. He went back into office to get letters for train, and on his way out heard engine whistle for brakes. Hastening toward bridge he found it gone and train in creek.

Owing to original stone abutments proving defective, the bridge was supported on pile bents until masonry should be rebuilt, which it was the intention to do this year. The pile bents forming bridge-seat were amply strong enough to carry any possible load that could be brought upon them, each pile being capable of supporting 20 tons, and they were capped by heavy timbers, mortised, tenoned and drift-bolted together in a workmanlike and strong manner.

On examination we find northerly side of bridge buried in creek, also one top chord and top laterals, floor beams standing at an angle of 45°, easterly end of bridge 15 ft. northerly of centre of track, westerly end 31 ft.; also find bridge thrown westerly about 16 ft., floor system firmly wedged against top laterals and top chord.

The cyclone, although some 1,000 ft. in width, seemingly concentrated its power underneath bridge, which is 22 ft. above bottom of creek, with embankments extending east and west from 14 ft. in height at bridge to nothing, at distances respectively 500 and 1,800 ft. across valley, striking floor system, breaking loose the joint fastenings of track rail on northerly side and east end of bridge 70 ft. distant, on southerly rail 120 ft. distant, shearing ¾-in. bolts in angle bars, drawing rails through the spikes some 60 ft. on westerly end, breaking south rail square off 2 ft. from joint at a point 76 ft. from bridge, slewing north rail out as bridge pulled it, taking ties along, then carrying floor system up against top laterals, lifting southerly side of bridge off bridge-seat, tearing loose the bridge-seat on northerly side, and finally throwing entire structure over into creek, a mass of ruins, as shown in drawing.

Statistics on the relation between velocity of wind and its pressure against an obstacle are very meagre, and seem not well determined. Smeaton's rule for such cases (which is adopted by United States Signal Service), where pressure is at right angles, is the pressure in pounds per square foot, is



equal to square of velocity in miles per hour divided by 200. Observations taken in Liverpool in 1860 would give a pressure per square foot almost double preceding rule. The highest recorded velocity of wind per hour on Mt. Washington, N. H., was 180 miles.

Now, in this case we have weight of bridge  $57\frac{1}{2}$  tons, double shearing of four  $\frac{3}{4}$  in. bolts, representing a resistance of 71 tons, and the transverse breaking of a 60-lb. per yard steel rail, which with resistance of pulling other rails through spike some 60 ft., would represent 72 tons more, making a total resistance of 200 tons to be overcome before bridge could be overthrown. At a fair estimate only 1,200 square feet of surface will be found in bridge for cyclone to operate against, which would require a pressure of not less than 333 lbs. per square foot. Assuming this to be at right angles would, according to Smeaton, represent a velocity of wind equal to 257 miles per hour.

Although this velocity of wind is greater than any record we have been able to find, still the fact exists that we have this weight and resistance of 200 tons which was overcome by power of the wind, and the conclusion is inevitable.

This cyclone extended over a number of miles south and north of bridge, destroying both lives and property.

A sulphurous smell was plainly discernible in the atm-

science has been left to the section foreman and his men, who some of them have a *standard*, some have none; and turn-outs have been put in almost invariably by these men with no mathematical calculation or study of any kind. A section foreman—a good one, however—on the great first-class Lake Shore Railroad, wished me to look at a turn-out he had just completed. He said he used a 75 ft. lead and never used any other. That was his standard, whatever frog was sent to him. The angle was of no account to him; in fact he didn't know as it would make any difference, and his curves were turned with an eye to curves and were smooth, and no doubt passed muster by the eye of the road-master. Viewing all the problems which have been inserted in your journal the past few months should teach railroad managers the fact that these switches all should be placed by the engineer and the engineer's instrument.

Old engineers all well know that in times gone by, when the engineer got his road-bed in shape and the track laid, perhaps a siding put in at the several stations, his services "were no longer required," and off to "pastures new" his attention was turned, and he hunted up another railroad to build.

Now that all these gentlemen have acquitted themselves

(main) line when  $n$  is infinity; hence, substituting this value, his formula becomes:

$$x = 2.17 \sqrt{\frac{d \times \infty}{\infty \pm 1}} = x = 2.17 \sqrt{d} \therefore d = \frac{x^2}{2.17^2}$$

which is correct in practice, if not exact.

In Mr. Trautwine's formula.

$$x = 2.17 \sqrt{\frac{d}{\infty \pm 1}} = 2.17 \sqrt{0} = 0.$$

which, even if be exact, is not practical. Hence, until a laborious critic comes to disturb me, I will put my faith in Mr. Myers.

GRATZ MORDECAI.

#### A Correction.

NEW YORK, Sept. 8, 1883.

TO THE EDITOR OF THE RAILROAD GAZETTE:

In a circular sent from our office last month, headed: "Extracts from Official Stenographic Report of Discussion on Standard Freight and Passenger Car-Trucks, etc., etc." Mr. John W. Cloud is reported as follows: "Mr. John W. Cloud, of Pennsylvania Railroad, thought that as the ger-



WRECK OF BRIDGE AND TRAIN ON THE INDIANAPOLIS & ST. LOUIS ROAD.

where after the storm, which, taken in connection with numerous balls of fire seen rising upward and exploding in the clouds, the singed and burnt leaves, the withered and cooked appearance of the trees, unmistakably show the existence of large quantities of electricity, well giving it the name of an electric cyclone.

In conclusion we would say that this bridge in strength and manner of construction was of the most approved form, and everything had been done to render it safe that human ingenuity could devise, and this accident again forcibly illustrates how puny are the works of man when coming in contact with the actions of the Almighty.

All of which is respectfully submitted.

W. C. IRWIN, Engineer of Bridges.

#### Frogs and Switches.

NEW YORK, Sept. 11, 1883.

TO THE EDITOR OF THE RAILROAD GAZETTE:

I am pleased to see the several gentlemen show up the "frog" and "switch" question, and all have manifested a thorough knowledge of the subject. I hope it will be the means of showing up the intricacy of the science of properly locating frogs upon future lines of railway. Heretofore this

so well, all of them seem to have forgotten that the bringing out of this whole mathematical talent grew from the fact that a gentleman correspondent in your paper was seeking to instruct section foremen, and gave out the simple rule that would be understood by them; not formulas, symbols and the bottom of trigonometry, but a rule I have given out 25 years ago for their instruction, also to be found in Latimer's instructions and other authors. Now the common section-foreman has gained but little from them, but it has interested the engineer, no doubt. But none have yet shown how to determine "angle of frog." Fill up the breach.

W. GRISWOLD, C. E.

#### Frog Formulae.

SYRACUSE, Sept. 9, 1883.

TO THE EDITOR OF THE RAILROAD GAZETTE:

I am not familiar with the formulae for fixing frog distances, but Mr. J. C. Trautwine, Jr., in trying to make Mr. Myers' formula more exact, seems to have narrowed its scope.

In Mr. Myers' formula  $d \times n$  will represent a straight

eral introduction of the suspension truck is only a matter of two or three years, the convention should be more conservative," etc. This is an error; he did not say this, but only alluded to the first speaker, who *did* say so; and these sentiments are not properly attributable to Mr. Cloud. It is due to him, therefore, that we take this mode of correcting the mistake.

SUSPENSION CAR-TRUCK MFG. CO.

#### Laying Out Switches and Frog Distances.

MANDAN, D. T., Aug. 12, 1883.

TO THE EDITOR OF THE RAILROAD GAZETTE:

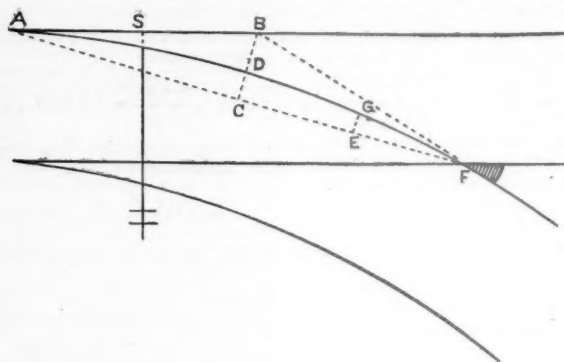
In all the criticisms of frog distances lately published in the *Railroad Gazette* there seems to be something lacking.

Mr. Griswold uses the term "head of switch" in a wrong sense, and says nothing about locating the switch. Mr. W. B. Parsons has the right idea, but it is not expressed in language comprehended by the average section-foreman.

Let me give directions for laying out switches and frog distances which can be understood by all:

Mark out head of switch (s); measure back on outside rail





to heel of switch, i. e., the length of that portion which should be left unspiked, the distance

$$SA = \sqrt{\text{gauge of track} \times \text{sq. of No. of frog} \times 4 \text{ times throw of switch.}}$$

From this point measure forward along same rail a distance,  $AB = \text{No. of frog multiplied by gauge of track, and from inside of rail at } B \text{ measure the same distance } BF = AB$ , which will give the location of the frog point  $F$ .

To obtain points on the curve of the lead, stretch a line from  $A$  to  $F$ , and from its middle point,  $C$ , measure  $CB$ , and put a tack half way between, at  $D$ .

From  $E$ , half way between  $C$  and  $F$ , measure  $EG = \frac{1}{2} CB$ .

These points with throw of switch will give three points on the curve, which will be sufficient.

Now could Mr. Parsons give us a simple formula for finding the length of switch rail to be left free in a turnout from a curve where the radius of the turnout and the main curve are not the same?

W. B. FULLER,  
Asst. Eng., N. P. R. R.

#### Joint Executive Committee Meeting.

The following is the official report of the meeting held last week:

FIRST DAY, THURSDAY, SEPT. 6.  
ADDRESS OF THE CHAIRMAN.

At the conclusion of the roll-call, the Chairman said: Gentlemen: The call for this meeting, issued on August 30, fully explains its object. I will read the first part of the call: "At a meeting of the trunk line presidents, held today, various representations were made of the cutting of rates by their western connections, and in consideration of said representations, the previous resolutions adopted for maintaining rates were reaffirmed; and it was decided to call a meeting of the Joint Executive Committee for the purpose of thoroughly investigating all charges or rumors of rate-cutting, and to adopt such additional measures as may be necessary for the strict maintenance of rates, on both eastbound and westbound traffic."

The important question to be decided at this meeting is, to determine whether the reported rate-cutting is true; and, if so, whether it can be stopped and full confidence restored in the future maintenance of rates. Supposing the fact can be established beyond a doubt that rates are not maintained, the several plans that then come up for your consideration are:

First.—Whether you will make any further effort to maintain rates, or let each road scramble for the business as best it can.

This is the simplest and easiest plan to be carried out. The result will be unremunerative rates and unjust discrimination—results which this Committee has so far desired to avoid, and should make every effort to avoid in the future.

The presidents of the trunk lines, at their meeting on Aug. 30, put themselves on record that their companies were not parties to any cut rates. The alleged irregular practices must, therefore, be confined to their western connections.

The second plan that suggests itself would, therefore, be for the trunk lines to establish arbitrary rates from their western termini, and to limit the strife for business at low rates to the western roads. While this plan would, perhaps, protect the trunk lines, it would work very injuriously towards their western connections, especially those which have so far strictly adhered to their agreements, and which are entitled to the protection of the trunk lines. Considering also the fact that the trunk lines now control a large interest in the western roads, and that it would be difficult to separate this interest from the trunk line interest proper, the greatest sufferers from the adoption of such a plan would, no doubt, be the western roads which are not under the control of the trunk lines.

The third plan which you will have to consider is whether a general reduction of the tariff shall be made to the lowest cut rate, so that all shippers may be put upon the same footing, this reduction to be continued until further cutting of rates is impossible.

While this remedy will make the business unprofitable, it will, at least, prevent unjust discrimination between shippers, and for that reason it is to be preferred to a general war of rates. The low rates may be continued until the assurance is given that all roads will strictly adhere to their agreements, at which time rates may be restored to the regular basis.

If the rate-cutting is not at once stopped by the roads now guilty of it, one of these three plans will have to be adopted, though the adoption of either of them would prove disastrous to the best interests of the railroad companies. The parties who cannot or will not adhere to their agreements, and who attempt to take advantage of the good faith of their associates in the Joint Executive Committee, should be held publicly responsible for the consequences.

It is necessary first to consider whether it is possible to impress those members of the Committee who may have been guilty of securing business by unfair means with the great responsibility resting upon them, and to induce them to return at once to the established tariffs. It is hoped that this may be the result of this meeting, especially as at this time there is a prospect of an increase in business, and the probability that all the railroads will have sufficient work to do at profitable rates.

For the purpose of strengthening the good faith of members of the Committee, it is absolutely necessary to remove the temptation for reducing rates by perfecting the existing agreements for the division of traffic at Western points, and

to make agreements for the division of traffic at other points where strife is likely to occur. There are at present only three principal shipping points in the West at which agreements for the division of traffic are carried out with some degree of success, viz., at Chicago, St. Louis and Cincinnati. The agreement at Chicago has not yet been perfected. The contract made at the last meeting has not yet been executed, but it is expected that it will be completed at this meeting. At St. Louis and Cincinnati the agreements require further strengthening and stricter execution. The division of traffic at other Western points, as above recommended, will do much to insure the maintenance of rates. In fact, I believe it is the only method by which peace can be maintained.

These agreements should not only provide for the division of traffic between the initial roads, but also between the immediate connections of the initial roads, thus avoiding much of the strife and difficulties which have led to the present state of affairs. Peoria seems to be a point that requires special attention, and if the initial roads there cannot agree upon a division of traffic, as they have heretofore been unable to do, an agreement should be made between the connecting roads of the Peoria roads.

We should also consider the question whether it should not be made a rule of this Committee that, whenever one road desires a division of traffic at any competing point, it should be obligatory upon the other roads to make such a division under the rules of the Committee. It is generally recognized that only by a division of traffic can the motive for ruinous strife between competing railroads be obviated, and if this plan works well and justly at one point, there is no good reason why it should not be adopted at all points where strife is likely to occur.

One of the methods of rate-cutting which has heretofore been practiced, namely, the so-called "slide billing," a plan for the prevention of which was adopted at a former meeting, is believed to have been substantially stopped; at any rate, we have received no charges that this practice is continued. If the cutting of rates is still continued, other means are being used which we have not been able to discover. As a check upon these methods, however, the plan of submitting all vouchers to this office for approval before they are paid has been agreed upon, and a rule made that the auditors shall give monthly certificates that no payments which have the effect of cutting rates have been made. This plan has not yet had a full trial. The original plan was somewhat defective, as it allowed the making of two audit sheets, only one of which—namely, that covering business from May 1—was submitted to this office. This has been corrected by requiring that all vouchers of every kind shall be embraced in one audit sheet, including those contracted prior to the 1st of May, so that the Auditor can now give a certificate as above described. So far we have not secured the monthly certificates of the auditors, but it is believed that when this plan is fully carried out, it will be of great service in stopping irregularities.

The only additional means for mutual protection I can now suggest is, that the rules regarding the cutting off of roads which do not maintain tariffs be somewhat modified. The plan of requiring them to go out of business does not seem to work well. Instead of that, the roads might be permitted to continue in business, but their connecting roads should be obliged to enforce upon them arbitrary rates from points of junction, and thus to make the business which they transact unprofitable for an extended period of time. Whenever a road has been deprived of prorating arrangements in this way, it should also not be allowed to receive any west-bound traffic.

The rules established for the prevention and punishment of fictitious billing also require some amendment, as it has been claimed in one case that came under our observation that the exact wording of the resolution does not provide for the punishment of fictitious billing in case it cannot be proven that the rates have been cut. Fictitious billing should be considered as *prima facie* evidence of rate-cutting, as it certainly would not be resorted to for any other purpose, except that of cheating connecting roads out of their just proportion of revenue, a transaction that is as reprehensible, if not more so, as rate-cutting.

One of the disturbing elements in the maintenance of rates to which I have to call your attention is the Delaware, Lackawanna & Western Railroad. That company is not now bound by any agreement to maintain tariff rates. The relations of the roads represented on the Joint Executive Committee toward those not members of the Committee should be clearly defined. The cutting of rates by any outside road must, necessarily, make it impossible for competing roads to maintain the tariffs. There is no reason why some understanding should not be reached at this meeting, how cases of this kind are to be dealt with. Only two plans can be adopted. If it has been found advantageous for the roads represented on this Committee to co-operate with each other in the maintenance of tariffs, and to adopt rules by which the roads violating the agreements shall be deprived of the advantages of prorating and from through connections, why should not the same rules be enforced against roads which are not represented on the Committee? The theory upon which we act is that of mutual protection against rate-cutting, and it seems to me that the general rule should be adopted, that no prorating arrangements nor through connections shall be made with any road, whether they are members of the Committee or not, that does not adhere to the established tariffs. If this cannot be brought about, then there is only one other plan, and that is to meet the lower rates made by competing roads.

I have indicated in a general way the subjects that require your consideration, and I need hardly point out the great importance of the present meeting to the railroad interests.

The question is whether the favorable results which have been obtained up to the present time by the co-operation of the railroads in maintaining reasonable and uniform tariffs shall be continued, or whether it shall be acknowledged to the whole country that the railroad managers are incapable of honorable dealing with each other, and unable to conduct

this great property upon recognized correct business principles.

It is necessary that you should know exactly the condition of affairs out West, and the extent to which irregularities in rates are alleged to exist. It may be well to read a brief abstract of the numerous charges which have been received at this office. Most of these charges, except those made in the last few days, have been investigated, and have, invariably, been denied.

In conclusion, I have to announce that since the last meeting the Chicago & Atlantic and New York, Chicago & St. Louis railways have become members of the Joint Executive Committee.

#### DISCUSSION REGARDING ALLEGED IRREGULARITIES IN RATES.

A list of charges that had been recently preferred was then read for the information of the Committee; also statistics regarding the distribution of the traffic, showing that certain lines were taking an unusual proportion of traffic from Chicago, Peoria, St. Louis and other points.

During the course of the discussion which then ensued, Mr. GRAY said:

"The explanations I made awhile ago with regard to the proportions of the traffic carried by the Pennsylvania lines would certainly go to show that rates are maintained over our lines as well as they ever have been; but on the general situation, not only relating to Chicago, but relating to other points in the West and Southwest, I am just as well satisfied as I can be of anything that rates are not held. I make no charge against any line. The facts must speak for themselves as to the movement of property over all these lines. I am well satisfied that the rates are not held. That is to say, the cost to the shipper is less by some lines than by others. It may be said, technically, that the rates are not cut; the way-bills, manifests, etc., show tariff rates and all that sort of thing, but in some way, in some form or in some shape, there is 'presto—change.' I am only prompted to say this by a study of the reports and statistics laid before this meeting. A corresponding state of facts has come to my knowledge often, in a thirty years experience, and I have never been mistaken; and you would not be either. The rates are not maintained in some shape or form. In what shape it is done I am not prepared to say. I believe that that is the opinion of every honest man here to-day, who knows anything about the freight business at all; that the cost of transporting property between the Western shipping point and its point of delivery in the East is not the same by all lines.

"Now then, admitting that fact, we are fooling away a good deal of time in talking this matter over. I believe you are all convinced of it, and the only question in my mind is, what is going to be done about it? Are you willing to let it go on and let those who maintain rates continue to suffer? We are doing some business; but we have not done so light a business in August, in through traffic since I have had connection with the line. \* \* \* I am not able to make up my mind that other lines are so superior to us that they, of themselves, without inducement, attract the traffic. In my judgment they don't do it. There is some other ulterior cause that does it. Where it is and what it is, I am unable to say. It is simply circumstantial evidence that is known to you all. It is here in this office. It is in your own experience, and in the experience of all of the gentlemen present. \* \* \* I fear that the rule that vouchers should be shown up and be submitted for approval is the very thing that has caused a retrograde movement in the matter of weights, and it is self-evident that since the adoption of that rule you have gone back to the reducing of your revenue by reducing weights—carrying more tonnage than you get paid for, which is the meanest way, in my judgment, that a man can cut rates. That is one and I believe a fruitful means for avoiding our agreements. It has been increasing for some time past. Another is that interior business is stopped off short of destination to which it is originally billed, and a rebate paid back to the shipper. I don't know how you can encompass these matters.

"I, perhaps, have said enough, but I desire to emphasize the fact that so far as the rates are concerned, no man connected with the organization of which I have charge (which constitutes the through business of the Pennsylvania lines—not the short business) has been permitted to vary from the established tariff. Our agents are all reticent; they are dissatisfied, they are disheartened, and they are unhappy. I do not know what remedy there is for this. You seem to have taken every measure to cooperate upon these matters. The experience of a number of years shows what a destructive thing—that a ruinous matter a war of rates is. It takes away millions of revenue without any positive gain, and then you have to start afresh without being any further ahead than you were before. It is an astonishing thing to me that this encroaching upon revenues is practiced and continued up to a point beyond endurance, until everything goes overboard entirely, and we go to ruin. Still it is a positive fact, patent to all of us, that this state of affairs exists."

The time for adjournment having arrived, Mr. Gray moved to postpone further consideration of the subject until to-morrow.

Mr. SEARGEANT, in supporting Mr. Gray's motion, said that he believed if the agreements for the division of traffic at Western points had been carried out, and the settlement of balances accrued thereunder had been promptly made, it would be one of the very best means for securing the maintenance of rates. Some blame was to be attached to all the parties to these divisions for not bringing that state of affairs about. He thought that the alternative plans referred to by the Commissioner would be disastrous in every form. It would be impossible for the trunk lines to maintain arbitrary rates from their Western termini, as they could not help participating in the acts of their connections. This had been tried and failed. He would strongly oppose any reduction in rates being made in the face of increased traffic as soon as the movement of this year's crops fairly started. He thought that further consideration of the subject had better be postponed until the next day's meeting, and that other questions relating to the condition of agreements for division of traffic at Western points should first be taken up.

Mr. Gray's motion to adjourn was carried.

The CHAIRMAN announced the meeting would now be adjourned until to-morrow, 7th inst., at 12 o'clock m., and that a meeting of the Chicago Committee would be held at 10 o'clock a. m., and of the St. Louis, Peoria, Cincinnati and Indianapolis Committee at 11 o'clock a. m.

#### SECOND DAY, FRIDAY, SEPT. 7, 1888.

The Committee reassembled, pursuant to adjournment, at 2.15 p. m.

The CHAIRMAN stated that the Chicago Committee had not completed its labors and would continue its meeting after the adjournment of the general meeting, and the conclusions reached would be communicated to the Joint Executive Committee by official circular; also that the Peoria, Cincinnati and Indianapolis committees had as yet been unable to hold their meetings.

#### MEASURES ADOPTED FOR THE MAINTENANCE OF RATES.

The subject of the future maintenance of rates was then taken up.

Mr. WILSON suggested that the agreement of Feb. 21,



1883, be read, and that every member present be asked to state whether he is complying with the conditions of that agreement, and whether he will renew his fealty to it.

The agreement of Feb. 21, 1883, was then read.

Mr. GRAY then offered the following resolution:

"Resolved, That the present tariff rates be reaffirmed, and that the members pledge themselves to maintain them in good faith, and that in case any rates were not maintained by any road or fast freight line working over such road, that the Commissioner shall apply the penalties provided for in the agreements of the Committee."

Mr. STAHLMAN objected to the adoption of any such resolution until some measures had been adopted to force the initial roads at all Western junction and competing points to agree upon divisions of traffic at such points, and he desired to offer the following resolutions:

"Resolved, That the roads represented on the Joint Executive Committee hereby pledge and bind themselves to a restoration and rigid maintenance of tariff rates from all points, and reaffirm and pledge themselves to carry out in good faith from this date the agreement of Feb. 21, 1883, and the subsequent resolutions adopted for the enforcement of said agreement.

"Resolved, Further, that the establishment of pools at all commercial centres and interior towns and junction points is absolutely essential in order to prevent discrimination against shippers and communities, and cutting of rates; and for the purpose of perfecting such pools, the Chairman shall request all roads in the West to immediately arrange pools at all points.

"Resolved, Further, that in the event of a failure by Oct. 1, next, to perfect pools at any point where one or more members of this Committee or the Chairman may deem a pool essential, the Chairman shall himself decree upon what basis the pool shall be made and traffic divided, or appoint some disinterested party to fix said basis, and the revenue of the ensuing twelve months shall be divided on the basis thus fixed.

"Resolved, Further, where any initial road shall refuse to pool or carry out the decision of the Commissioner or his appointee, as provided in the preceding section, the decree shall be enforced through connecting roads, who stand hereby pledged to exact such rates in through traffic as the Chairman may in his judgment deem essential to prevent such roads from carrying more than the allotted proportion of traffic, and for the protection of the initial roads which may fall short of their allotment it is understood and agreed that a sufficient excess over the proportion of through rates shall be collected under the provisions of the preceding section to reimburse such roads for the loss of their allotted traffic, which amount shall be made payable at the end of each month upon an order from the Chairman.

"Resolved, Further, that all other settlements (under pools formed as hereinbefore provided) shall be made monthly in cash through the accounting departments of the roads interested, or in case of failure to thus settle, the settlements shall be made upon order of the Chairman.

"Resolved, Further, that all pools formed under these resolutions, whether formed before or after, shall date from Oct. 1, next, unless by agreement of initial roads they take effect prior to that date, and they shall remain in effect until Oct. 1, 1884."

Mr. STAHLMAN stated in full the reasons for offering this resolution.

The Chairman said that he considered the spirit and intent of Mr. Stahlman's resolutions right, but it might be inexpedient to enter so fully into details at present, as it would consume more time than was at the disposal of the Committee; it would be better for the present to establish the general principles of Mr. Stahlman's resolutions, leaving the details to be arranged hereafter in each particular case.

In accordance with this suggestion, the following resolutions were adopted by unanimous vote:

"Resolved, First, That the roads represented on the Joint Executive Committee hereby pledge and bind themselves to a restoration and rigid maintenance of tariff rates from all points, and reaffirm and pledge themselves to carry out in good faith from this date the agreement of Feb. 21, 1883, and the subsequent resolutions adopted for the enforcement of said agreement.

"Resolved, Second, That in case these rates are not maintained by any one or more of the roads represented on the Joint Executive Committee or by the lines or connections working over said roads, upon ascertaining the same the Commissioner shall apply the rules made and provided for dealing with such cases.

"Resolved, Third, That in the opinion of this Committee it is absolutely necessary that divisions of traffic should be made from all competing Western points, and that former resolutions to that effect (March 3, 1882, and April 26, 1883) be reaffirmed and carried into effect.

"Resolved, Fourth, That when any member of this Committee demands that a division of east-bound traffic be made from any Western competing point, it is agreed that the other companies interested shall co-operate and become parties to such division, under the rules of the Committee. Any company, whether member of the Committee or not, failing or refusing to become party to such division, the division of traffic shall be made between the connecting roads of said initial roads, which connecting roads shall not carry more freight than allotted to them under the rules of the Committee.

"Resolved, Fifth, That the Chairman at once take steps to carry out these resolutions and put himself in communication with the roads interested, with the view of promptly establishing divisions of traffic from all competitive points."

#### INTERPRETATION OF AGREEMENT OF FEB. 21, 1883.

The CHAIRMAN said he desired to have the sense of the meeting as to whether the penalties provided for by the agreement of Feb. 21 should be applied to cases of fictitious billing, whether there is any proof of rate-cutting or not; that in his opinion fictitious billing under any circumstances was in violation of the rule of this Committee.

On motion of Mr. SKINNER it was,

"Resolved, That fictitious or short billing, whether there is any evidence of rate-cutting or not, shall be regarded as *prima facie* evidence of cut rates, and dealt with accordingly."

The CHAIRMAN suggested that when any road was suspended on account of fictitious billing or cutting of rates, the westbound traffic to competing points should be diverted from that road by its connections.

On motion, it was,

"Resolved, That, in case any road is suspended from interchange of business, etc., under the agreement of Feb. 21, 1883, as an additional penalty all west-bound business to competing points shall be diverted from that road during the period of its suspension."

#### REPORT OF COTTON COMMITTEE.

The Report of the Cotton Committee, of their meeting held at Niagara Falls, Aug. 29, 1883, was then read.

Mr. GEIGER said that before final action was taken on the report he would like to have it referred back to the Cotton Committee for further consideration, as at the meeting at Niagara Falls there was not a full representation, and none of the important resolutions were carried unanimously.

On motion of Mr. Gray, it was agreed that the report be referred back to the Cotton Committee, with the request that a meeting of that committee be held at the earliest possible day.

The Chairman appointed Messrs. F. H. Kingsbury, P. C. & St. L. Ry., and H. B. Smith, L. N. A. & C. Ry., members of the Cotton Committee. He also appointed Messrs. F. H. Kingsbury, P. C. & St. L. Ry., and J. S. Clark, L. E. & St. L. Ry., members of the Tobacco Committee.

#### REPORT OF THE ST. LOUIS COMMITTEE.

The St. Louis Committee submitted the following report, which was accepted:

"Whereas, The St. Louis Committee having in their meeting this morning settled all their differences, be it

"Resolved, That we hereby agree to maintain the present tariff from St. Louis, and earnestly recommend that the same be done from all other points."

The time for adjournment having arrived, and as the majority of the members could not remain over another day, the consideration of the other subjects mentioned in the Chairman's address was postponed until the next meeting of the Committee.

On motion the meeting adjourned.

ALBERT FINK, Chairman.  
C. W. BULLEN, Secretary.

#### Petroleum as Fuel.

Since the discovery of the oil springs in America various efforts have from time to time been made to introduce petroleum as a fuel for steam boilers and general heating purposes, but notwithstanding that the subject has been taken in hand by both British and foreign governments, as well as by private individuals of considerable influence and ability, it is a fact that not only has no practical progress been made in the use of liquid fuel, but that in those cases where it has been tried, and experiments carried out with the best results as regards evaporative efficiency, the installation has been abandoned, and a return made to our old and much-abused friend, coal. The reason for this is not far to seek, and consists in the fact that the cost of evaporating a given quantity of water by means of heat produced by the combustion of petroleum so far exceeds that when coal is used, as to much counterbalance any advantages that may be gained; always excepting those few countries where, from scarcity of coal and wood and abundance of petroleum, the latter fuel is found to be the cheapest.

One of the earliest investigators into the merits of liquid fuel was Sainte Claire Deville, who carried out a series of very extensive experiments with a couple of locomotives on the Paris & Strasbourg Railway, which were specially fitted up, under his direction, with appliances for burning the oil. The results of these experiments were published in the *Journal of the French Academy of Sciences* for 1868 and 1869; the average evaporation being given as about 11 lbs. of water per pound of fuel. In the United States, commissioners were appointed to specially consider the value of petroleum as fuel on board steamers, a sum of \$5,000 being appropriated for making the necessary tests; but after long and careful trials, the Secretary of the Navy finally reported against its use, on the grounds that convenience, comfort, health and safety were against it, the only advantage shown being a not very important reduction in bulk and weight of fuel carried. As far as our own country is concerned, the whole subject was brought before the Institution of Civil Engineers in 1878 by Mr. Harrison Aydon, in a comprehensive paper dealing with the matter historically, and in which the results of a great number of experiments made with different forms of boilers under various conditions, and with several kinds of burners, were given. In this paper the use of liquid fuel was strongly advocated, and it was shown that with burners on Mr. Aydon's system, in which superheated steam was used for evaporating the oil previous to combustion, and in which a jet of steam was associated with the burning fuel, perfect combustion without smoke was obtained, with an evaporation almost identical with the full calorific power of the oil. Other burners, on somewhat different plans, but all employing the use of steam in combustion, gave almost similar and equally satisfactory results. In view of this it is somewhat surprising to read in a pamphlet recently published in order to puff up the value of "water gas," produced by the process of Dr. C. Holland, to which our attention has been directed, that "how to use petroleum or mineral oil in a direct manner as fuel with good economy and effect has never been discovered." Further, "that if such a direct way to burn petroleum had been discovered, we should have been much later in learning, if at all, how to make the most effective and economical fuel ever known, by using petroleum as a solvent of water, and thus reproducing the enormous heat which the constituents of water, oxygen and hydrogen create in reuniting. The effective power of the combustion of oxygen with hydrogen has been shown by the experiments of various standard authorities to be 50 per cent. greater than that of the combustion of the same quantity of oxygen with the equivalent of carbon required for its separation from the hydrogen of the water." This, as is afterwards stated, has been learnt and applied by Dr. C. Holland, whose process is thus described: "Not a particle of oil or of oil vapor is burned in this process after its operation is fairly started. The oil is entirely combined with the oxygen of the water—steam—within the retorts, without a single atom of atmospheric oxygen. The constant temperature of the fire chamber keeps the retorts hot enough for the disengagement of the oxygen of the steam in the presence of the carbon of the oil. The chemical affinity of these two elements at such temperature causes them to unite, and so releases the hydrogen of the steam, which issues at the burners in the most powerful combustion, producing instead of smoke, only the purest aqueous vapor."

These modest statements practically amount to a claim for producing perpetual motion; for it is proposed to acquire heat energy by continually separating water into its constituents, oxygen and hydrogen, and by its combining these two gases, their separation, it is alleged, absorbing less heat than is given out in their combination, so that there is a surplus which may be utilized for raising steam or for any other purpose. The absurdity of such a claim will, of course, be apparent to any engineer who gives the matter a moment's serious consideration; but as there are doubtless many to whom the whole subject is strange, we propose to briefly consider the circumstances attending the combustion of mineral oil, and to make a concise comparison between its calorific power and other properties and those of coal.

A pound of petroleum may be taken as consisting of 0.85 lb. of carbon and 0.15 lb. of hydrogen, which, if burnt direct to carbonic anhydride and water with the exact equivalent of atmospheric air, would produce 22,700 heat units, with an elevation of temperature of 5,484 deg. Fah., always supposing that combination could take place at this temperature, which is doubtful. This supposes a thermal value of 17,000 units per pound of carbon, and 55,000 units per pound of hydrogen, the former being somewhat higher than is generally allowed for carbon in the solid state, and the latter is a little lower than is taken for gaseous hydrogen. Assuming now that, instead of being burnt directly with air, the petroleum is first heated in a chamber in con-

tact with steam to such a degree that partial combustion takes place, the oxygen of the steam combining with the carbon of the oil to form carbonic oxide, while the hydrogen of the steam, as well as of the oil, is set free. In this case the 0.85 lb. of carbon will combine with 1.13 lbs. of oxygen from 1.27 lbs. of steam, giving out 5,950 heat units, and setting free the 0.15 lb. of hydrogen in the oil, as well as 0.14 lb. with which the oxygen was associated in the form of steam. The separation of this steam into its constituent gases is only effected by the expenditure of heat, as much heat being absorbed as is given out in its formation, so that to supply the 1.13 lbs. of oxygen, 8,680 units must be communicated from the outside. After this partial combustion there remains 1.98 lbs. of carbonic oxide and 0.29 lb. of hydrogen, which, on issuing from the retorts through suitable nozzles and meeting a proper supply of air, would be burnt to carbonic anhydride and water, producing 25,430 heat units. Adding to this the 5,950 units from the formation of carbonic oxide, and deducting the 8,680 units required for the dissociation of the 1.27 lbs. of steam, there is left a net total of 22,700 units as the result of the complete combustion of 1 lb. of petroleum, which is precisely the same value as was found in the case of direct combustion with air. It will thus be seen that no advantage as regards increase in heating power is obtained by the use of steam. In practice, however, there seems to be an advantage of another kind, inasmuch as the steam is found to promote combustion by bringing about a proper intermixture of combining particles, so preventing the formation of the smoke which nearly always accompanies combustion with air alone, and which is the cause of considerable loss from waste of carbon and reduction in the efficiency of the heating surfaces. Steam also promotes the draught, and so permits of a lower temperature of escaping products than when the draught is entirely dependent on the chimney. Taking this temperature at 300 deg. Fah., and assuming the temperature before combustion at 60 deg. Fah., each pound of petroleum will give 21,460 available units of heat, which is equivalent to an evaporation of 22.21 lbs. of water from and at 212 deg. Fah.

Turning now to coal—which we may take as being composed of 83 per cent. of carbon and 5 per cent. of hydrogen, the remainder being chiefly ash, with a little oxygen and nitrogen—and taking thermal values of 14,500 and 50,000 units respectively for 1 lb. of solid carbon and hydrogen in the condition in which it exists in coal, we find that the combustion of 1 lb. to carbonic anhydride and water will give 14,535 units, while, if only the exact proportion of air be admitted, the rise in temperature would be 4,845 deg. Fah. Allowing an initial temperature of 60 deg. Fah., and a temperature of 500 deg. Fah. for the escaping products, this represents an evaporation of 13.5 lbs. of water from and at 212 deg. Fah. The evaporative efficiency of 1 lb. of coal to 1 lb. of petroleum is, therefore, as 1 to 1.64 under the conditions taken; but as with petroleum the admission of air to the combustion chamber can be controlled with much greater exactness than with coal, there is less loss from the cooling effect produced by more air entering than is really necessary to support combustion, and allowing for this, we are disposed to place the possible actual efficiencies as 1 to 2. With this as a basis it is easy to arrive at the relative cost of the two fuels. Taking coal at 15s. a ton, the value of 100 lbs. weight will be 8½ pence. Crude petroleum is at present worth 6d. a gallon, but is not fit to be used as a fuel without distillation. We will, however, take it at 6d., and as the specific gravity is .800, water being 1.0, 100 lbs. weight will occupy 12½ gallons, and will cost 75 pence. The relative costs of coal and petroleum, weight for weight, are, therefore, as 1 to 9.3; but as we have admitted the evaporation efficiencies to be as 1 to 2, it makes the actual cost of evaporating a given quantity of water with petroleum to be 4.65 times as much as it is with coal.

One of the chief advantages alleged in favor of petroleum is that it would occupy much less space than coal, and that ships could therefore take away a much greater supply of fuel than at present, which would enable them to remain longer at sea, and obviate the necessity for coaling depots. This advantage has been very much overrated, for with petroleum of specific gravity 0.8 equal spaces would be occupied by equal weights of coal and oil. This allows 50 lbs. weight to the cubic foot, which is about correct for north-country semi-bituminous coal when heaped, Welsh and Scotch being heavier, and therefore making the comparison less favorable to petroleum. It would appear, then, that taking into account the calorific power of the two fuels, a given amount of storage room would be just twice as efficient if petroleum was used as in the case of coal. In addition to this there must be reckoned the reduction in the number of stokers, which is no doubt a very important feature, especially at sea. Against this, however, the highly inflammable nature of the oil must always be considered a source of great danger, as well as the difficulty in storing it in vessels sufficiently away from atmospheric action. There is also the difficulty which may arise from the clogging-up of the apparatus, and its destruction from the intense heat. The high furnace temperature is also exceedingly apt to produce priming, though this could be guarded against to some extent; but we believe it is entirely owing to excessive priming that such absurd reports have been made as to the evaporative power of petroleum, some experimenters having recorded as much as 35 lbs. of water per pound of fuel, whereas we have seen that 22.21 lbs. is the maximum amount attainable, even when only the exact supply of air required for combustion is admitted.

That petroleum can under some circumstances become an efficient and economical fuel is a proposition we are not disposed to dispute; for instance, in the *Engineer* of March 23 we published an illustrated description of a system adopted in Russia, where, from the scarcity of wood and other fuel, mineral oil has been very advantageously used. What we do contend is, that excepting under such special conditions as are not likely to obtain in England and other principal countries in Europe, or even in the United States, which is comparatively close to the oil-wells, petroleum is a much more expensive fuel than coal. It is well for us also to state again, that there is no difficulty in burning mineral oils, notwithstanding what may be said to the contrary by anxious inventors. It is too late in the day to claim any very special advantage in the use of superheated steam. This has been done over and over again, and though we do not pretend that one form of burner may not give somewhat better results than another, there is certainly little prospect of any startling discovery being made which is at all likely to enable petroleum to compete commercially with coal as a general fuel for raising steam. What is really wanted is a reduction in the price of the oil, but we think that not even the prospective new sources of supply, when made available, will effect much in this direction.—*The London Engineer*.

#### The Use of the Westinghouse Automatic Brake

The following circular has been issued by the Westinghouse Air Brake Co. in relation to the use of the automatic brake:

In consequence of an accident, which was partly due to



the improper application of the brakes from the interior of the car, we sent a circular on March 6, 1888, to all of the railways using the automatic brake, asking for replies to the following questions in regard to the use of the conductor's valve:

"First. How many times has the use of the conductor's valve been the means of averting disaster?"

"Second. Do you find that it is frequently used by unauthorized persons?"

"Third. What is your opinion as to whether or not this valve should be continued in use on the cars?"

We have received many answers to the questions, and these answers are very conflicting; but numerous instances are given wherein the presence of the conductor's valve has probably averted serious accident. No cases are given where accidents have been caused by the improper use of the conductor's valve, though it seems that the valve is frequently operated by unauthorized persons.

The majority of those replying were in favor of continuing the valve in use, while others were decidedly of the opinion that it ought not to be used.

Many of those in favor of its use were of the opinion that the valve ought to be so arranged in each car that it cannot be operated by passengers without the knowledge of everybody in the car, and it was frequently suggested that the conductor's valve, usually put in the water-closet, should be boxed, so that it cannot be tampered with by people in the closet.

The agitation of this question has led some railways to introduce a change, which, we think, can well be followed by all railway companies. The conductor's valve is located and arranged so that it can be operated only from the inside of the car, by pulling the cord attached to the handle of the valve, and the escape pipe from the valve is made to enter the car. By this arrangement the pulling of the cord and the opening of the valve instantly applies the brakes, and the passengers are made aware of the use of the apparatus by the escape of the compressed air.

During the 10 years in which the automatic brake has been in use, but one case has come to our knowledge in which an accident occurred to a train stopped by the improper use of the conductor's valve, and even in this instance it had been admitted that the neglect of trainmen to observe ordinary precaution for protecting a standing train was the sole cause.

We think it will be generally conceded that but a very small percentage of the unexpected stoppages of trains is due to the improper application of the brakes, and that the rules governing employees are sufficient to protect any train that is unexpectedly brought to a stand.

Although the improper use of the conductor's valve has only indirectly been the cause of one accident to our knowledge, yet accidents, due to the neglect of the trainmen in not observing the rules that are especially designed for such cases, have resulted from the stoppage of trains at unexpected points, by the bursting of hose.

We earnestly call the attention of railway officials to the importance of drilling trainmen, so that in the event of the sudden stoppage of the train, resulting from a burst hose, or the conductor's valve being operated, they may immediately release the brakes, and proceed to a safe place for repairing the damages, rather than to undertake such repairs out on the line without protecting the rear of the train.

We should suggest an order be issued to all trainmen, worded somewhat as follows, and that the men should be occasionally drilled in order to see that they quite understand their duties in this respect.

#### TO ALL TRAINMEN:

All trainmen are directed to make themselves familiar with the method of releasing the automatic brake, by opening the cocks under the vehicles, to avoid unnecessary delay from the unexpected stoppage of the train by the bursting of a hose or pipe. It is important that the following rules should be observed.

The engineer should immediately, on feeling the brakes applied, turn the handle of the engineer's brake valve so as to maintain the pressure in the main reservoir, which is all-important. He should observe his gauge, and if he sees that all of the air has escaped, he will know that a pipe has burst or that the conductor's valve has been opened and held open. If the pressure is only reduced sufficiently to apply the brakes, and the reduction then ceases, he will know that the conductor's valve has been opened long enough to cause the stoppage of the train and has then been closed. In this case he can easily release the brakes in the usual way, upon receiving the proper signal from the conductor.

The engineer should warn the trainmen, when the brakes have been applied in such a manner that they cannot be released from the engine, by giving a succession of short double whistles (or any other signal to be agreed upon).

The rear brakeman must, upon the stoppage of the train, immediately proceed back the proper distance to protect the rear of the train, without attempting to release any brakes.

The conductor shall proceed to the rear of the train to see that the rear brakeman has protected the train, and shall release as many brakes, beginning at the rear, as he can.

The fireman shall release as many as he can, beginning at the tender.

The middle brakeman will begin about one-third of the distance from the engine, and release the brakes toward the rear, until he meets the conductor.

As soon as the brakes are released the train should proceed, depending upon the hand brakes, until a station is reached, where the damages can be ascertained and repaired without danger to the train.

All of the brakes on a long train can be released in about one minute, if each of the employees attends to the duties designated above.

#### TRAIN SIGNALING APPARATUS.

Among the replies received to our circular, there were several suggesting that the conductor's valve should be retained in use, provided some means could be offered for releasing all of the brakes from the engine independently of the brake pipe.

We have perfected an apparatus of this kind, to be used in connection with our train-signaling apparatus.

This signaling apparatus requires an extra line of pipe, in which a pressure of about 15 lbs. per square inch is maintained.

The apparatus for releasing the brakes is a small valve, having one end connected to the signaling pipe and the opposite end connected to the brake cylinder. So long as the ordinary pressure of about 15 lbs. is maintained, there is no connection from the brake cylinder to the atmosphere. In order to release the brakes it is only necessary to increase the pressure in the train signaling pipe to 35 or 40 lbs., when these special valves are opened, allowing the air to escape from each brake cylinder. The total cost of the train signaling apparatus with these special release valves will be \$25 per car, or \$5 more than the train signaling alone.

We may say that the train signaling apparatus has been adopted by the Pennsylvania Railroad, and is being applied to all of its equipment.

#### THE SCRAP HEAP.

##### Locomotive Building.

The Central Vermont shops in St. Albans, Vt., have just completed a new passenger engine for the road with 17½ x 24 in. cylinders and driving wheels 5 ft. 8 in. in diameter. The engine, truck and tender wheels are of wrought iron, with steel tires, imported from England. A few wheels of this kind have lately been put in service on the road as an experiment.

The Paul Locomotive Works, in Baltimore, which were completed a few months ago, but have never been used, have been sold by the trustees to Matthai, Ingram & Co., who will use the buildings for other purposes. The sale was made on account of the failure of T. H. Paul & Co., who built the works.

##### Car Notes.

The Pullman car works in Detroit are building two sleeping cars for the Grand Trunk, eight sleeping cars for the Northern Pacific and six parlor cars for the New York, West Shore & Buffalo road.

The Carolina Car Co. in Raleigh, N. C., is building two narrow gauge passenger cars for the Milton & Sutherland road.

The Canadian Pacific Railway Co. is about to build extensive car shops in Winnipeg, Man., the intention being to build the freight cars for the road there.

The Wason Car & Foundry Co., in Chattanooga, Tenn., is to build 100 coal cars for the Alabama Great Southern road.

##### Bridge Notes.

Sealed proposals will be received at the office of the City Engineer in Lowell, Mass., until Sept. 20, for building an iron bridge over the Concord River on Taylor street in that city. Bids will be received for two spans, each 103½ ft. between centres of end pins, width of roadway 25 ft., and two sidewalks, each 6 ft. Specifications, blank forms, etc., can be obtained from the City Engineer.

Mr. J. W. Walker, formerly connected with the Keystone Bridge Co. as one of the principal engineers, has lately embarked in the business of bridge building on his own account, and is constructing an extensive establishment on Forty-seventh street in Pittsburgh, along the line of the Allegheny Valley Railroad. The shops are being constructed of the Centennial building material, and will be of a very substantial character. It is proposed to build steel and iron bridges for railway and highway purposes, locomotive turn-tables, roof trusses and architectural work. Mr. Walker has secured the contract for building the new Baltimore & Ohio shops at Glenwood, near Pittsburgh, which are to be of iron.

The Keystone Bridge Co. is running its shops in Pittsburgh extra time to fill orders. Among the orders recently taken in is one for a long bridge over the Schuylkill River at Manayunk, on the new Reading line of the Pennsylvania Railroad.

The Pittsburgh Bridge Works in Pittsburgh are building four iron bridges for the Canadian Pacific road, and have a number of other orders on hand.

The Atlanta Bridge & Iron Works of Wilkins, Post & Co., in Atlanta, Ga., have lately taken contracts for a 54-ft. turntable for the Savannah, Florida & Western road, and for the following bridges: Three spans of 77 ft. 6 in. each over North Drake's Creek for the Louisville & Nashville road; three spans of 130 ft. each over the Catawba River, on the Chester & Lenoir Division of the Charleston, Columbia & Augusta road; two spans of 135 ft. each over the James River at Richmond, Va., for the Richmond & Danville road; two spans, one of 106 ft. and one of 154 ft., for the Mobile & Ohio road; two spans of 175 ft. each over the Wateree River at Camden, S. C., this contract including the piers, which are to be of wrought-iron cylinders filled with concrete. All of these bridges are to be of the triangular or Warren girder pattern.

##### Iron Notes.

The Joliet Steel Co. at Joliet, Ill., is running its blast furnaces steadily. The steel works and rail mill were recently started up and are running full double turn.

The iron furnaces in the Lehigh Valley are giving evidences of an improved outlook. At Bethlehem, Catasquaga, Easton and other points there have been indications of renewed activity. Of eleven furnaces in the vicinity of Pittsburgh all are in blast except one, and the stock of metal on hand is reported not to exceed 6,000 tons, with a daily average consumption of 2,500 tons.—*North American*.

The Elizabethport Rolling Mill at Elizabethport, N. J., has been started up and is running on fish-plates and merchant bar.

A new rolling mill is being built at Kewanee, Ill., to make iron for the manufacture of pipes.

The Linden Steel Co., Limited, has just completed the erection of a 20-in. plate mill, and has everything ready for making sheet and plate of tank and boiler qualities. This makes two plate and sheet mills (one of 18 in. and the other of 20 in. diameter), one bar mill (18-in.), one rod mill of 10 in. diameter, one universal mill, and three bammers; showing that the company has increased the capacity very greatly.—*Pittsburgh American Manufacturer*.

The rolling mill at Gibraltar, Berks County, Pa., has been stopped for the purpose of making repairs and putting in additional machinery.

The Pennsylvania Steel Co. at Steelton, Pa., last month shipped 13,740 tons of steel rails. The shipments of frogs, switches, forgings, etc., were also large.

The rolling mill at Port Clinton, Pa., is being repaired and made ready to start.

##### Manufacturing Notes.

Ward, Stanton & Co. have just launched from their shipyard at Newburg, N. Y., the last of four iron ferryboats built by them for the New York, West Shore & Buffalo road. These boats are to be used on that company's ferries across the Hudson River between Weehawken and New York.

The interlocking system of signals and switches is being put in by the Fitchburg and Old Colony Railroad companies at the crossings of their tracks in Fitchburg and Concord.

##### The Rail Market.

**Steel Rails.**—Business is chiefly confined at present to small orders, for which quotations are \$38 to \$38.50 per ton at mill for full delivery, and \$37.50 to \$38 for winter. It is said that \$36 to \$36.50 has been offered for some large lots, but not yet accepted.

**Rail Fastenings.**—The market is quiet, with quotations still unchanged at \$2.60 per 100 lbs. for spikes in Pittsburgh, and \$3 to \$3.25 per 100 lbs. for track bolts. Splice-bars are steady at 1.90 to 2 cents per pound.

**Old Rails.**—There is more demand for old iron rails, and some sales are reported at \$23 to \$23.50 per ton for tees at tidewater.

##### The Hog With a Pass

Tale of a traveler: "The car was crowded, but finally I found a man occupying half a seat, and a small bundle he owned the other half. I inquired if the half-seat with the bundle was to be occupied by a

passenger, and with a stare which said 'Your room would be better than your company,' the bundle was removed. But the man was revenged on me for depriving him of a whole seat by sitting with one foot crossed over his knee and constantly wiping the dirt off upon my dress. When the conductor came around for the tickets I observed that the man who wished to monopolize so much room had a free pass!"—*Boston Transcript*.

##### Driving Across the Kinzua Viaduct.

A dispatch from Bradford, Pa., Sept. 12, says: "A resident of Buffalo, named William Batterson, who has been looking after business interests of his in the Kinzua district of the McKean County oil region, gives the particulars of a most extraordinary adventure which he and his wife and two children had in the Kinzua wilderness a few nights ago, the entire family being saved from a most horrible death through the merest accident. The party left Bradford in the evening to drive to an isolated settlement known as Howard Hill, where Mr. Batterson has property. The road leading to the place runs for the most of the distance through the deep forests of the region, and is high among the mountains. After leaving the village of Alton the way is especially wild and intricate, and, after driving a long time through the woods, Mr. Batterson found that he had lost his way, and all his efforts to find a thoroughfare out of the wilderness seemed to serve only to plunge him deeper into it. Darkness came on and Batterson soon discovered that his horse had wandered off of even the semblance of a road he had been following, and was picking an aimless course through the woods. The night was very cold, and Mrs. Batterson and the children began to suffer from the chilly air, as they were not clad with the expectation of being out long after night-fall. Mr. Batterson found an old railroad lantern in the carriage, and, lighting it, he prospected through the woods in the hope of finding a road that would lead them out of the woods. There was none to be found.

"About a hundred yards ahead of where he left the carriage he came out upon a railroad track. This was the track of the Erie Railway's Bradford Branch or Johnsonburg Extension. Feeling that neither his wife nor children could stand a night of exposure in the mountains, he resolved to drive along the railroad track, notwithstanding the great danger that attended such a course, in the hope of coming to some road crossing the track or some station near by. He did not know what railroad it was, nor what the chances were of trains coming along before he might reach a place of safety. His wife was willing to take the risk with him, and he led the horse out upon the track. He then walked ahead with the light, and his wife drove the horse along over the ties after him. On either side were the woods and high banks. There was no way to escape should a train appear. They had proceeded nearly a mile without finding any crossing or place where they might turn out. Then Mr. Batterson took his wife and children from the carriage, so that they might climb the bank or get into the woods away from danger if a train was heard approaching. He led the horse, and they followed on foot at the side of the track. After proceeding in this way for a hundred yards or so, they came to a bridge, on one side of which was a narrow plank walk, the railroad track occupying the remainder of the bridge. This was the great Kinzua Viaduct, which is the highest railroad bridge in the world, being 303 ft. above the creek. It is nearly half a mile long. Mr. Batterson and his family were now in a situation the peril of which was too appalling, and the uncertainty of which filled them with terror. They were entirely ignorant as to where the bridge would lead them if they ventured to cross it, but knew it was madness to remain where they were. Mr. Batterson at last determined to attempt the crossing, trusting to Providence for the result. He succeeded in getting his horse on the footpath. The wheel on one side of the carriage extended over on to the track and bumped over the ties. Mr. Batterson at first suggested abandoning the horse and carriage, but his wife would not hear of it, taking the ground that their presence on the track might lead to a disaster on the railroad. The horse was led slowly forward on the bridge, and Mrs. Batterson and the children followed close behind the carriage. A high wind was blowing down the valley, and it was with difficulty that they could keep their feet. They had proceeded on their way only a short distance when a sudden gust of wind extinguished the lantern. It was impossible to relight it in the gale that was blowing, and they were compelled to grope their way onward in the darkness. They crossed the bridge in safety, and, if they had known it, really placed themselves in greater peril, for trains pass over the bridge at a very slow rate of speed, and can be stopped almost immediately.

"When Mr. Batterson and his family left the bridge they entered a deep rock cut made for the track, and were wrapped in still greater darkness. A train coming upon them in the cut would have crushed them all to death, for there could have been no escape. That they were not ground to pieces in that way was owing only to the fact that a coal train which was due at the cut at the very time Batterson and his family were stumbling and feeling their way through it was detained a mile below by a hot journal. The party emerged from the cut and discovered the light at Palen's Switch, a small station a short distance below, just as this coal train whistled for the station. The horse and carriage were turned from the track into the road leading alongside of it to the station, and Mrs. Batterson and her children had reached a place of safety just as the train rushed by and thundered into the cut. A delay of one minute in making their way through the passage would have been fatal to the entire party. When the full force of the peril to which they had been exposed and the narrow escape they had made broke upon her, Mrs. Batterson fainted away. Mr. Batterson himself was so unnerved that it was some time before he could summon aid. They found shelter at Sweet's boarding-house, at the station, where all were soon revived. They ascertained that Howard's Hill was only four miles from the station. In spite of the terrible experience through which they had passed and the lateness of the hour, Mrs. Batterson was anxious to proceed to their destination, which they did, reaching the settlement safely about midnight."

##### A Mission Car.

Edwin A. Harris, of Fitchburg, for twelve years a railroad conductor, and connected prominently with the Railroad Men's Christian associations in different sections of the state, has for about nine months during the past two years traveled among railroad men in the South and West, holding religious meetings. Mr. Harris now proposes to build and equip a mission car, to be called "Bethlehem," and he has already procured from the Jackson & Sharp Co., of Wilmington, Del., a plan of the proposed car, the estimated cost of which is from \$10,000 to \$13,000. The proposition is made to churches, Sunday schools and to individuals to subscribe to a mission fund of \$18,000, to be placed in the hands of a board of trustees, for the construction and equipment of a mission car, to be used in evangelistic work among railway men. This fund is to be divided into 1,800 shares of \$10 each, and may be taken in single shares or blocks of any desired number. The car is to be constructed after plans and models suggested by



practical railroad men, and is so arranged that it furnishes a room for meetings, and is also supplied with cooking and sleeping apartments for those engaged in the work. It is to be built to run over any ordinary gauge railroad. It is designed as a convenient headquarters for mission work among railway men, for the distribution of Bibles and reading matter, and is to be manned by workers of practical railway experience. It is believed a car commissioned in this service, stopping in the railway centres such length of time as the field demands, may be an efficient auxiliary to the agencies already established. Subscriptions may be sent, or plans and circulars giving further particulars will be furnished, on application to E. A. Harris, Fitchburg, Mass. — *Boston Herald.*

#### A Railroad Corporation Enforcing Morality.

The Atchison, Topeka & Santa Fe Railroad has undertaken to prove that although corporations may not have souls, they nevertheless have consciences, and are to be classed among the list of moral agencies. This road refused to run a branch into Dodge City, Kan., until the authorities suppressed the dance-houses and gambling saloons. This may be called fighting vice with a rod of iron.

#### Attempts at Train Wrecking.

A dispatch from Ithaca, N. Y., Sept. 5, says: "An attempt was made to wreck the Utica, Ithaca & Elmira passenger train to-day near Spencer by fastening iron plates on the track. The obstruction did not throw the train off, but struck the bottom of the cars and caused great excitement among the passengers. The attempt to wreck the train was made close to a deep cut. No clue to the wreckers has been discovered."

A dispatch from Racine, Wis., Sept. 5, says: "Frank Williams, a farm laborer, was walking along the track of the Chicago & Northwestern road last night. He stumbled over a pile of ties and logs and when he attempted to remove them two masked men jumped from the bushes, presented revolvers and ordered him to desist. He ran to a neighboring farm house and returned with reinforcements. Several shots were exchanged, resulting in the wreckers being routed. Their intention was to throw the Lake Superior train from the track. The wreckers fled. It is believed they are in Milwaukee."

#### An Old Employee.

Abner Goodspeed, of Owego, commenced work for the New York & Erie Railroad Co., Sept. 7, 1849, as brakeman, and in a short time was promoted to baggage-master, which position he still holds, having lost but very little time on account of sickness or any other cause. — *Port Jervis Gazette.*

#### Burning Bridges in Texas.

At Longview, Tex., Aug. 31, the trains on the Texas & Pacific road were delayed several hours by the burning of a large bridge a few miles out of Longview. On the International & Great Northern, a short distance below Palestine, Thursday afternoon, Aug. 30, the long trestle-work over Stony Creek caught fire about 4 o'clock and burned about 50 bents of the southern approach to the bridge. Three gangs of workmen and a gang of state convicts were set to repairing the damage and were still at work Saturday afternoon. The Iron Mountain passengers had to be transferred to a train on the other side. The work was then being pushed on and the men expected to have it finished by Sunday night. When the Iron Mountain train got into Round Rock at 5 p. m. on Saturday evening, several hours late, word was received that a bridge about eight miles out had burned. The section men were called in and the engine took them down. The bridge was repaired by 9:30 o'clock, and the train got into Austin by midnight, over 12 hours late. So many bridges are burning every day through the state that many think it is the work of incendiaries, while others attribute it to engine sparks. This last supposition is the most plausible, as the dry vegetation is like tinder, especially so near the bridges, where the grass is heavier and has a good opportunity to burn before discovered. — *St. Louis Chronicle, Sept. 3.*

#### ANNUAL REPORTS.

The following is an index to the annual reports of railroad companies which have been reviewed in previous numbers of the present volume of the *Railroad Gazette*:

Page.	Page.
Alabama Great Southern.....478	Meadville.....495
Alliance, N.Y. & A.S. ....485	Mexican Central.....361
Ashtabula & Pittsburgh.....495	Mexican Railway.....361
Atchison, Topeka & Santa Fe.....246	Michigan Central.....279, 280
Atlanta & West Point.....508	Milwaukee, Lake Shore & West.....395
Atlantic & Pacific.....340	Missouri Pacific.....167, 230
Augusta & Knoxville.....356	Missouri Pacific.....167, 230
Baltimore & Potomac.....427	Mobile & Girard.....540
Baltimore & Pocomoke.....427	Montpelier & Wells River.....736
Boston, Barre & Concord.....356	Morris & Essex.....495
Boston, Concord & Montreal.....356	Natchez, Jackson & Col.....495
Boston & Lowell.....23	New Castle & Beaver Vt.....495
Boston, Revere Beach & Lynn.....100	New Haven & Northampton.....7
Burr, Cedar Rapids & No.....232	New London & Northern.....397
Camden & Atlantic.....179	N. Y. Cen. & Hudson River.....78
Canada Southern.....396	N. Y. & Greenwood Lake.....478
Canadian Government Roads.....321	N. Y., New Haven & Hartford.....22
Central Branch.....396	N. Y., Ontario & Western.....397
Central Iowa.....396	N. Y., Penn. & Ohio.....213, 214
Central of New Jersey.....312	N. Y., Susquehanna & Western.....356
Central Pacific.....163, 478	Norfolk & Western.....180
Charlotte, Col. & Augusta.....123	Northern Central.....123
Chesapeake & Ohio.....395	Northern (New Hampshire).....314
Cheshire.....389	Northwestern Ohio.....495
Chicago & Alton.....122, 143	Ogdenburg & L. Champlain.....497
Chicago, Bur. & Quincy.....195	Ohio & Mississippi.....497
Chl. Mil. & St. Paul.....167, 395, 396	Oregon Improvement Co.....478
Chl. & Northwestern.....512	Oregon & Transcont. Co.....511
Chl. Rock Island & Pacific.....443	Pacific Mail Steamship Co.....478
Chl. St. P., Minn. & Omaha.....536	Panama.....231
Chl. & West Michigan.....575	Pennsylvania Company.....497
Cincinnati & Eastern.....463	Pennsylvania Railroad.....150, 154
Cincinnati, Ham. & Dayton.....463	Philadelphia & Reading.....232
Cincinnati, N. O. & Tex. Pac.....395	Phila. W. & Baltimore.....232
Cleve. Col. Cinc. & Ind.....183	Pittsburgh, Cinc. & St. Louis.....312
Cleveland & Pittsburgh.....395	Pitts. Ft. Wayne & Chl.....349, 495
Columbia & Greenville.....69	Pittsburgh & Lake Erie.....40
Concord.....356	Portland & Ogdensburg.....100
Connecticut River.....105	Portland & Rochester.....100
Delaware & Hudson Canal.....100, 122	Providence & Worcester.....104
Delaware, Lacka. & Western.....122	Rochester & Pittsburgh.....41
Del., Lac. & W. Leased Lines.....497	Rutland.....511
Des Moines & Fort Dodge.....392	St. Joseph & Western.....477
Denver & Rio Grande.....392	St. Louis, Iron Mt. & So.....107, 231
Erie & Pittsburgh.....495	St. Louis & San Francisco.....197
European & North American.....22	St. L., Vandalia & Terre Haute.....247
Fitchburg.....40	St. Paul & Duluth.....104
Florida & Pens. Marquette.....392	St. Paul, Minn. & Manitoba.....510
Georgia.....312, 574	Savannah, Florida & West.....213
Grand Trunk.....62, 229	Sioux City & Pacific.....213
Hannibal & St. Joseph.....163	South Carolina.....39, 121
Hanover Junc. Han. & Betha.....355	Southern Pacific.....598
Hartford & Conn. Western.....7	Sullivan County.....427
Housatonic.....196	Sussex.....47
Houston & Texas Central.....59	Texas & Pacific.....211
Huntington & Broad Top.....182	Toledo, Ann Arbor & Gd. Trk.....510
Illinois Central.....167, 180, 182	Union Pacific.....164
Indiana, Bloom. & Western.....493	Utah Central.....280
Indianapolis & Vincennes.....493	Vermont Valley.....427
International & Great No.....246	Vicksburg & Meridian.....598
Jeffersonville, Madison & Ind.....495	Virginia Midland.....495
Kentucky Central.....244	Wabash, St. Louis & Pac.....167, 180
Lake Shore & Mich. So. 278, 293, 396	Warren.....37
Lawrence.....495	Western R. R. Association.....407
Lehigh Coal & Navigation Co.....123	
Lehigh Valley.....79	
Little Rock & Ft. Smith.....278	

Long Island.....73	West Jersey.....68
Louisville & Nashville.....51	West Va. Central & Pittsburgh.....213
Maine Central.....71	Wilmington & Northern.....160
Manchester & Lawrence.....395	Woodstock.....410
Manhattan.....181	Worcester & Nashua.....40
Massillon & Cleveland.....495	York & Peachbottom.....355

#### Allegheny Valley.

This company works the River Division, including the main line from Pittsburgh to Oil City, 132 miles, and the Plum Creek Branch, 7 miles, the Low Grade Division, from Red Bank, Pa., to Driftwood, 110 miles, and the Sligo Branch, 10 miles; a total of 259 miles. There was no change in mileage last year. The report is for the year ending Dec. 31.

The equipment consists of 70 locomotives; 29 passenger, 10 combination and 8 baggage and mail cars; 296 box, 1 stock, 247 oil-tank, 15 rack, 1,507 gondola, 33 flat and 33 caboose cars; 1 directors' car, 1 pay car, 1 fire extinguisher, 4 wrecking and 16 boarding cars.

The general account is as follows:

Stock.....	\$2,166,500.00
Mortgage bonds.....	1,730,000.00
Income bonds.....	8,760,700.00
Real estate bonds and mortgages.....	161,443.97
Guaranteed coupons bought and held by Pa. R. R. Co.....	3,530,305.00
Debits payable in income bonds.....	74,833.28
Accounts and balances.....	635,105.55
<b>Total.....</b>	<b>\$24,049,540.50</b>
Unavailable assets, stocks, claims, etc.....	514,476.02
Materials.....	131,828.62
Accounts and balances.....	137,956.49
Cash.....	221,132.87
Income account, balance.....	6,982,993.50
<b>Total.....</b>	<b>\$2,037,887.80</b>

The mortgage debt consists of \$4,000,000 River Division 7.3 per cent. first-mortgage bonds; \$10,000,000 Low Grade Division 7 per cent. first-mortgage bonds, and \$2,700,000 Low Grade Division 5 per cent. second-mortgage bonds. Of the income bonds there are \$3,352,700 issued to individuals, and \$5,408,000 to companies who contribute to the payment of interest under traffic contracts.

During the year \$200,000 Low Grade Division second-mortgage bonds were paid off, two of the annual installments due the State of Pennsylvania (which holds this mortgage) having been paid. There were \$589,000 income bonds issued, chiefly in settlement of interest.

The traffic for the year was as follows:

Train miles:	1882.	1881.	Increase.	P. c.
Passenger.....	526,187	499,514	26,673	5.3
Freight.....	1,035,897	1,014,837	21,060	2.1
Ballast.....	114,769	103,671	11,098	10.7
<b>Total.....</b>	<b>1,676,853</b>	<b>1,618,022</b>	<b>58,831</b>	<b>3.6</b>
Pass. car miles.....	1,817,273	1,812,287	4,986	0.3
Freight car miles.....	20,013,065	18,075,000	1,938,065	7.0
Passengers carried.....	1,070,583	1,037,884	32,699	3.5
Pass. -miles.....	19,141,989	17,392,800	1,849,189	10.6
Tons freight carried.....	3,613,085	3,185,176	427,909	13.4
Ton-miles.....	153,860,833	127,615,267	26,245,566	20.5
Av. train load:				
Passengers, No.....	36	35	1	2.9
Freight, tons.....	149	126	23	18.3

Leading items of freight were 1,919,627 tons coal; 291,467 tons crude oil; 90,499 tons refined oil; 107,475 tons pig iron and rails; 165,101 tons iron ore; 393,940 tons lumber. The average rate per unit of traffic was as follows, in cents:

	1882.	1881.	Inc. or Dec.	P. c.
Per passenger-mile.....	2.732	1.627	1.105	2.788
Per ton-mile.....	1.151	0.725	0.426	1.275

The reduction in expenses was not sufficient to offset the reduction in the average rates received. This decrease in rates has been continuous, as shown by the following table, giving the average rates for 12 years past, in cents:

	1882.	1881.	1880.	1879.	1878.	1877.
Pass. -miles.....	2.732	1.151	1.176	3.020	1.960	1.950
Freight -miles.....	2.732	1.322	1.874	3.310	2.070	2.440
Pass. -miles.....	2.810	1.370	1.873	3.130	2.440	2.440
Freight -miles.....	3.040	1.600	1.872	3.350	2.580	2.450
Pass. -miles.....	3.070	1.710	1.871	3.320	2.450	2.450

The average earnings per train mile last year were 150.87 cents; expenses, 91.38 cents; net earnings, 59.49 cents.

The earnings for the year were as follows:

	1882.	1881.	Increase.	P. c.
Freight.....	\$1,770,287	\$1,026,892	\$743,395	8.8
Passengers.....	522,696	482,060	40,636	8.5
Mail and express.....	45,525	44,026	1,499	3.4
Rents, etc.....	17,850	16,800	1,050	6.0
<b>Total.....</b>	<b>\$2,356,698</b>	<b>\$2,169,787</b>	<b>\$186,911</b>	<b>8.6</b>
Expenses.....	1,427,456	1,205,114	222,342	12.8
<b>Net earnings.....</b>	<b>\$929,242</b>	<b>\$964,673</b>	<b>-\$35,431</b>	<b>-2.7</b>
Gross earn. per mile.....	9.099	8.778	.321	3.6
Net.....	3.588	3.496	.092	2.7
Per cent. of expenses.....	60.57	58.31	2.26	

The gross earnings are the largest reported since 1874, and have been exceeded only in that year and 1873. The net earnings were exceeded in 1875, 1876 and 1877 only.

The earnings and expenses were divided as follows:

	Earnings.	Expenses.	Net earn.	Gross.	Net.
River Div.....	\$1,574,426	\$903,772	\$670,654	\$11,327	\$4,600
Low Grade Div.....	774,007	486,062	287,945	7,037	2,610
Sligo Branch.....	8,175	6,722	1,453	817	145
<b>Total.....</b>	<b>\$2,356,608</b>	<b>\$1,429,456</b>	<b>\$929,242</b>	<b>\$9,099</b>	<b>\$3,588</b>

The increase in earnings was from coal, lumber and general freights; there was a decrease in the transportation of oil, both crude and refined.

During the year 2,508 tons steel rails and 108,140 new ties were used in renewals. The River Division is now all laid with steel.

The usual improvements and additions to bridges and buildings were made, including a brick engine-house at Oil City. The Pittsburgh yard was enlarged and 8.02 miles new sidings built.

The result of the year was as follows:

	Net earnings, as above.....	\$929,241.93
Real estate, etc.....	\$42,638.05	
Interest on bonds and car trusts.....	1,143,987.69	
Interest on income bonds.....	583,414.57	
<b>Total.....</b>	<b>\$1,770,040.31</b>	
Deficit for the year.....	\$840,798.38	
Increase in coupons held by Pa. R. R. Co.....	\$618,975.00	
Income bonds and scrip issued.....	501,197.10	
Increase in balances due.....	18,923.42	
Profit and loss charges.....	9,746.21	
<b>Total.....</b>	<b>\$1,238,840.93</b>	
Less decrease in debt and increase in assets.....	398,048.35	
<b>Total.....</b>	<b>\$840,798.38</b>	

During the year two installments of \$100,000 on the Low Grade second-mortgage bonds were paid. Of the in-

come bond interest the sum of \$71,593 was paid in cash from contributions under traffic contracts, the balance in new income bonds.

The report says: "During the year no charges have been made to capital account. In the operating expenses are included one new engine, three new passenger coaches, the annual one-tenth payment of car trust on 250 freight cars, the rebuilding of the engine-house at South Oil City, and other permanent improvements, aggregating \$113,965.31."

"The increase in operating expenses is also largely due to the increase in tonnage and passengers hauled, the freight tonnage having increased 13.38 per cent., and the freight ton-mileage 20.53 per cent. \* \* \*"

"A continued reduction in freight rates has been necessary on account of the competition of other lines. The percentage of empty mileage of freight cars continues high—39.72 per cent. on the River Division, and 46.50 per cent. on the Low Grade Division."

"Attention is called to the continued exemption from loss and accident in the transportation of freight and passengers. During the year no loss of life or injury to passengers has occurred, and the amount paid for loss and damage to freight was very small—\$1,230.87, or 0.069 per cent. of the freight revenues."

"There will be 1,800 tons of steel rails required for the year 1883—1,500 tons for the Low Grade Division and 300 tons for the Plum Creek Branch and Pittsburgh yard. For the year 1883, 50,000 cross ties will be required for the River Division, and about the same number for the Low Grade Division."

#### Connecticut & Passumpsic Rivers.

This company owns a line from White River Junction, Vt., northward to the Canada boundary at Derby Line, 110.3 miles. It controls and leases the Massawippi Railway, from Derby Line to the Grand Trunk road at Sherbrooke, P. Q., 34.7 miles, with a branch to Stanstead, P. Q., 2 miles, making 147 miles worked. The company also owns the Newport & Richmond road, from Newport, Vt., to the Canada line, 32 miles, but leases that road to the Southeastern Railway Co., of Canada. The thirty-eighth annual report is for the year ending June 30 last.

The equipment consists of 30 locomotives; 16 passenger and 12 baggage, mail and smoking cars; 520 box, 100 stock, 465 platform and 9 caboose cars; 2 boarding and 3 crane cars.

The general account, condensed, is as follows:

Stock.....	\$2,244,400.00
Bonds.....	1,850,000.00
Notes payable.....	245,000.00
Reserve.....	249,569.96
Accounts and balances.....	40,083.68
Earnings, surplus.....	5,616.98
<b>Total.....</b>	<b>\$4,634,700.62</b>
Construction.....	\$3,516,525.90
Newport & Richmond R.R.....	350,000.00
Southeastern Ry. Co.....	100,000.00
Other stocks and property.....	62,241.42
Accounts and balances.....	25,186.13
Stock and materials.....	195,254.23
Notes receivable.....	364,000.00
Cash.....	21,493.55
<b>Total.....</b>	<b>\$4,634,700.62</b>

Stock and bonds remain unchanged. There was an increase of \$45,000 in notes payable. The funded debt consists of \$1,500,000 main line 7 per cent. bonds, and \$350,000 Newport & Richmond 5 per cent. bonds, the interest charge being \$122,500 yearly.

The traffic for the year was as follows:

Train miles:	1882-3.	1881-2.	Inc. or Dec.	P. c.
Passenger.....	303,063	296,037	7,026	2.4
Freight.....	298,773	249,522	49,251	9.8
Service.....	25,410	34,488	D. 9,078	26.0
<b>Total.....</b>	<b>627,246</b>	<b>580,047</b>	<b>47,199</b>	<b>8.1</b>
Passengers carried.....	227,598	200,240	27,358	13.7
Passenger miles.....	8,365,227	7,198,586	1,166,641	16.2
Tons freight carried.....	361,442	360,517	D. 925	1.4
Ton-miles.....	22,792,090	22,589,950	D. 202,140	0.9
Av. train load:				
Passengers, No.....	28	24	4	16.7
Freight, tons.....	76	91	D. 15	16.5

There was a considerable increase in both through and local passenger traffic. In freight there was a very small increase, chiefly in through business.

The earnings for the year were as follows:

	1882-83.	1881-82.	Inc. or Dec.	P. c.
Freight.....	\$473,908	\$478,447	I. \$461	0.1
Passengers.....	309,940	279,289	I. 30,651	10.9
Mail and express.....	30,523	29,329	I. 1,194	4.0
Rents, etc.....	65,481	64,084	I. 1,397	1.2
Total.....	\$884,852	\$851,749	I. \$33,103	3.9
Expenses.....	613,882	547,904	I. 65,978	11.0





Published Every Friday.  
CONDUCTED BY  
S. WRIGHT DUNNING AND M. N. FORNEY.

#### EDITORIAL ANNOUNCEMENTS.

**Passes.**—All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.

**Addresses.**—Business letters should be addressed and drafts made payable to THE RAILROAD GAZETTE. Communications for the attention of the Editors should be addressed EDITOR RAILROAD GAZETTE.

**Contributions.**—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

**Advertisements.**—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

#### THE NORTHERN PACIFIC.

The Northern Pacific Railroad was formally completed last Friday, when President Villard drove the "last spike" before a great assemblage of distinguished personages, whom he had assembled from England, Germany and Austria, as well as this country. The event is certainly one of great importance to certain parts of the country, and of course to the railroad company, but to the country and the world it is insignificant compared with the opening of the Union and Central Pacific route in 1869. That first opened the way across the continent, and, what was perhaps still more important, to the interior of the continent west of the Missouri. The work was done in the face of obstacles which no successor could meet. For some time there was no railroad to its eastern terminus (the Northwestern was not completed to Council Bluffs until 1867), and vast quantities of supplies were hauled for it across Western Iowa. The wilderness on its line was then more savage than any now left in the United States, except Alaska. But the strong arm and the great resources of the United States were behind it; extraordinary inducements were offered to complete the road and to complete it as rapidly as possible; and it was pushed through from beginning to end with extraordinary vigor and without interruption. Since that time we have seen another line entirely completed across to the Pacific coast, and two others more than half way across, to junctions with the two roads from San Francisco. A new Pacific railroad ceases to interest more than a new road east of the Mississippi, and may be much less important in its effects on traffic.

The Northern Pacific is certainly much less important than the first Pacific railroad, but it is much more important, both for through and local traffic, than any of the others that have been built. It does what none of them have done, in that it brings into closer connection with the East an important district on the Pacific coast. At this distance we are apt to think of that coast as a unit of moderate extent, all reached tolerably well by a single railroad. In fact from Puget Sound to San Diego is as far as from New Brunswick to Florida; and from San Francisco to the mouth of the Columbia is equal to the distance from New York to Charleston. We would hardly think that New York and Savannah or Charleston could be served equally well by a railroad to either of them, yet this is as reasonable as to suppose that a railroad

to San Francisco should serve Portland and Oregon as well as San Francisco and California; or even more so, for Oregon and California have no connection by rail, as have New York and the South Atlantic ports, and between the country which has its outlet at San Francisco and that which ships from the Columbia River there is an immense territory very thinly inhabited and almost a desert. The two communities are not only distant but distinctly separate.

Now the Northern Pacific abolishes for Oregon the cost of ocean transportation between San Francisco and Portland, about 700 miles, on all transcontinental shipments, and gives the further advantage of a great reduction in the time required on the journey. Thus Oregon and Washington must at once feel the advantage of the railroad to a marked extent, and to the country east of the Rocky Mountains with which they trade or may trade the advantage will be similar, but not proportionally nearly as great, as they are great and Oregon is little.

This part of the Pacific district is, however, much less important than California, though settled longer by Americans, as it has been much longer a part of the United States. It never had the great flow of immigration which the gold mines brought to California and it has not so large an extent of valuable agricultural land. For farming and grazing, and especially for wheat production, the absence of a transcontinental railroad has not been a serious disadvantage. The California wheat no less than the Oregon and Washington wheat still goes to market by way of Cape Horn, and Oregon does not produce the magnificent fruits which find a market as far as the Atlantic coast. The chief obstacle to its agricultural development has been a lack of local railroads, which has been made good of late years. It will be interesting then to compare the population and chief productions of California with those of Oregon and Washington, as shown by the late census, as follows:

	Cal- ifornia.	Oregon and Wash- ington.	Oregon.	Wash- ington.
Population.....	864,694	249,884	174,768	75,116
Acres improved land..	10,869,698	2,682,991	2,198,645	484,346
No. horses.....	237,710	169,955	124,107	45,848
" cattle.....	664,307	550,796	416,242	134,554
" sheep.....	4,152,346	1,376,045	1,083,162	292,883
" hogs.....	603,550	303,057	156,292	46,828
Crop of wheat.....	29,017,707	9,401,332	7,480,010	1,921,322
Other grain.....	15,914,157	7,610,915	5,433,489	2,177,428

California thus had in 1880 about 3½ times as many inhabitants and four times as much improved land as Oregon and Washington together; only about a fifth more cattle, and three times as many sheep and hogs. It produced three times as much wheat and twice as much other grain in 1879.

The progress made since we can only judge from the reports of grain production in 1882, and of live stock on the first of January last, as follows:

	Wheat.	Other grain.	Cattle.	Sheep.
California.....	36,046,600	14,470,300	575,000	5,907,580
Oregon and Wash- ington.....	14,479,300	8,216,518	632,300	2,793,457

The changes from the Census figures are:

	Wheat. Increase.	Other grain. Decrease.	Cattle. Decrease.	Sheep. Increase.
California.....	No. 7,028,893	1,443,857	89,307	1,755,331
Per cent.	24.2	9.1	13.3	42.1
	Wheat. Increase.	Other grain. Increase.	Cattle. Increase.	Sheep. Increase.
Oregon and Wash- ington.....	No. 5,077,998	605,903	81,504	1,417,412
Per cent.	54.0	8.0	14.8	103.0

In everything Oregon and Washington have made most progress. In wheat this was probably chiefly due more to the accidental condition of the crops than to acreage sown, and if we had this year's figure this would appear, as there was a great increase of acreage over last year in California and a much smaller one in Oregon and Washington. But there is a decrease in the acreage of other grains in California, with an increase in the other two states, and a decrease in the number of horned cattle in California which brings it below the number in Oregon and Washington, while against the enormous increase of 42 per cent. in sheep in California, Oregon and Washington show the astonishing increase of 103 per cent.

The fact is that California has been comparatively stationary in these years of great growth almost everywhere in the country. It has added very little to its railroad system, while in this time almost the whole railroad system of Eastern Oregon and Washington—the part which has been growing fast—has been created. The wheat lands on the Upper Columbia have been brought under cultivation meanwhile, and the demand for stock on the grazing plains east of the Rocky Mountains has stimulated the production in Oregon, which is more favorable for breeding, as the climate is milder and the young stock are not killed so often in winter. Especially is this the case with lambs, which it is difficult to keep over the first winter east of the Rocky Mountains north of the Union Pacific Railroad, which

country now, to a considerable extent, procures its sheep (wethers) from Oregon, instead of breeding them. Heretofore the Oregon cattle and sheep have been driven over the mountains, grazing on the way. Perhaps in this the Northern Pacific may find an important traffic, though so long as there is grazing on the way the animals will be shipped only if rates are very low.

We see then that the part of the Pacific coast which is greatly benefited by the completion of the Northern Pacific, though vast in extent and rapidly increasing its production, has a very small population and a small production at present. Minnesota grows twice as much wheat as Oregon and Washington together; Illinois sometimes four times as much; and of other grains Illinois has grown nearly forty times their last year's crop, and new Nebraska twelve times as much. There is plenty of room in Eastern Oregon and Washington for a great addition to the wheat production, and probably live stock can be much increased also; but Oregon and Washington in proportion to their area will never rank in agriculture nearly as high as the prairie states. The great forests will in time be a source of immense wealth, but probably will not be utilized very rapidly, and will be marketed by sea rather than by land, unless the railroad can make a rate low enough to bring lumber from Washington to Dakota, and cause it to compete with Michigan and Wisconsin lumber.

But the value of the railroad to its owners does not depend chiefly upon the production and growth of the Pacific end of it, which will give it the longest haul, but on that of the country along its line. It makes accessible an immense territory hitherto reached only with difficulty, and in which the production of coarse articles for consumption on either coast or abroad was impossible because of the cost of transportation. For only a small part of its length is the country comparable in productiveness with the prairie states of the Northwest, but it makes up in quantity for quality.

As it is, the fertile agricultural country on its line in Western Minnesota and Eastern Dakota extends quite as far as the agricultural country on the Union Pacific in Nebraska or the Kansas Pacific in Kansas—perhaps a little farther, though the Northern Pacific has the disadvantage of an unproductive country for some 150 miles from Lake Superior before this fertile country is reached. Further west the grazing country is probably better than on the Union and Central Pacific there being very little absolutely worthless land, though like the other grazing country, it takes a great deal of land to support a thousand cattle or sheep. For the now prosperous community in Colorado and the smaller one in Utah which afford much traffic to the Union Pacific, it has the very much smaller mining communities of Montana and Idaho, and Idaho it crosses far to the north of its chief population, which is served by a branch of the Union Pacific. Montana and Idaho together had but 75,768 inhabitants in 1880, but then Colorado and Utah together had but 126,650 in 1870, shortly after the Union Pacific was open, which increased to 338,555 in 1880. It would be dangerous to say that the northern territories will not grow as fast for the next ten years; but it is not probable that there will be any such development of mining in them as there has been in Colorado. They have not been so inaccessible that they could not be pretty thoroughly explored for mines, and there has not recently been much increase in the mining industry there, and its mines are what have made Colorado grow. Both Idaho and Montana have been accessible by rail for two years.

But on the other hand the Northern Pacific has not so long a line through non-agricultural country to be supported—something like a thousand miles, while on the Union & Central Pacific are about 1,500 miles of such country. Further, in the mining and grazing country on the Northern Pacific there are more fertile valleys, each of limited extent but in the aggregate considerable, than further south. There will be, except in the mountains, few long stretches of the road where there is not some population and production directly along the road; and as there is most of the way no other line for hundreds of miles, a small production per square mile may contribute a large aggregate traffic.

Most of the road, however, has now been open a year or more; 450 miles of the eastern end, through by far the larger part of the cultivable land on the whole line, for ten years; and there is comparatively a small part of the country on the line, and a great part of that in the mountains, which is this year first made accessible. The fact that the road was not open through has not been a great disadvantage to the country on its line except that in Oregon and Washington. It has been for some time possible to utilize the capacities of the country along the road. A great many men and a great deal of money have been en-



gaged in doing this for two or three years, more in Dakota than elsewhere, but also further west. If the country grows for some years to come as it has recently, the road must soon find abundant support. Already it has very respectable earnings, which the through traffic may not largely but will considerably increase.

#### Frost and Traffic.

To estimate the amount of injury to corn by frost we need to know not only where there has been frost and the proportion of the crop injured in the several places, but also the amount planted in these places, which latter all-important fact is generally ignored. The vast difference in the production of adjoining states is not generally understood, and probably many would think an increase or decrease of 25 per cent. in Minnesota would equal one of 10 per cent. in Iowa, when in fact the last time it had a good crop Iowa produced 260 millions, while the largest crop Minnesota has ever had was but about 21 millions. So Illinois in 1879 produced no less than 325 million bushels; Wisconsin but 34 millions.

The West as a whole has not had a good corn crop since 1880. The whole country had a wretched one in 1881, but in 1882 the whole South, Kansas, Missouri and Nebraska had a fine crop, leaving Iowa, Illinois, Indiana, Ohio, which in 1879 produced 828 millions and 47 per cent. of the total production of the United States, with but 566 millions.

It would bring no comfort to have the corn crop in these states as large as in 1881 and 1882. It was disastrously bad in those years. The whole stock of hogs of the country has been materially reduced by them, and our provision exports as well as our corn exports limited thereby. Moreover, they have planted a considerably larger acreage this year than last, and a simply fair yield should bring a crop 200 millions greater.

But great as may be the destruction by frost in Michigan, Wisconsin and Minnesota, and the losses to individuals in these states, it can have but a trifling effect on the country at large, because these are not corn states, and if half their crops were destroyed, it would reduce the corn crops of the country little more than two per cent. But just as soon as we go further south, damage becomes a serious matter.

We will get a pretty good idea of the relative importance of corn in different states by the following statement of the acreage in each as reported by the Census for 1879 and the Agricultural Department since:

	1879.	1880.	1881.	1882.	1883.
Michigan...	919,792	855,430	894,000	929,760	911,165
Wisconsin...	1,013,363	1,023,254	1,054,000	1,117,240	1,106,968
Minnesota...	438,737	442,220	508,500	661,050	727,155
Dakota...	90,852	108,356	120,056	186,247	270,058
<b>Northern tier</b> ....	<b>2,464,774</b>	<b>2,429,270</b>	<b>2,576,556</b>	<b>2,894,297</b>	<b>3,014,446</b>
Ohio.....	3,281,923	3,198,400	3,134,400	2,977,680	3,067,010
Indiana.....	3,678,420	3,421,700	3,657,800	3,438,332	3,541,482
Illinois.....	9,019,381	8,840,180	9,093,600	7,914,042	8,151,463
Iowa.....	6,616,144	6,847,180	6,710,200	6,777,302	6,980,621
Missouri.....	5,588,265	5,650,120	5,650,100	5,763,102	5,878,364
Kansas.....	3,417,818	3,625,200	4,196,500	4,280,430	4,708,473
Nebraska.....	1,630,600	1,919,600	2,149,200	2,364,120	2,813,303
<b>Seven corn states</b> ...	<b>33,232,611</b>	<b>33,502,380</b>	<b>34,594,800</b>	<b>33,515,008</b>	<b>35,140,716</b>

We see then that the four states in the northern tier have altogether a smaller acreage than Ohio, and little more than the new state of Nebraska. In all the others named, corn is the most important crop.

It might be supposed that the proportion of land planted to corn falls off gradually to the northward in such states as Iowa and Illinois. This is hardly the case. The transition from this country where corn is the chief crop to that where comparatively little corn is planted is quite rapid. The northern third of Illinois grows more corn than the central third, not because it is better for corn, but because it is not good for wheat, which is largely grown further south. In Northern Iowa, which extends considerably further north than Illinois, corn is less raised than in the central and southern parts of the state; but still it is a very important crop as far north as the Dubuque-Sioux City line of the Illinois Central. One of the New York newspapers said recently that little corn is grown for market north of the latitude of Fort Wayne and Des Moines. This is far from the truth; for a considerable distance further north, nearly or quite to the Wisconsin line, the acres planted to corn outnumber those of all other crops together except grass, and in some parts of this district not much is exported in the shape of corn, it is because the farmers feed hogs with it and export them. In 1880 the Chicago & Northwestern, whose lines were all north of Des Moines, brought nearly 15 million bushels of corn to Chicago, and only 2,400,000 bushels less than the Rock Island, which is wholly in the corn country. It is true that most of the Northwestern's lines are north of the corn country proper, but there are not many roads of equal length on which more

corn is raised than on the Northwestern's line from Chicago to Council Bluffs.

The Milwaukee & St. Paul has heretofore had but little road in corn country, but its Council Bluffs line lies through the same country as the Northwestern's.

The production of the four border states, Michigan, Wisconsin, Minnesota and Dakota, for the last four years has been:

	1879.	1880.	1881.	1882.
Total.....	83,524,636	85,007,333	73,001,000	82,570,800
Per acre....	34.0	35.2	28.3	28.5

While the production of the seven corn states has been:

	1879.	1880.	1881.	1882.
Total.....	1,201,841,211	1,046,004,300	737,759,000	955,595,800
Per acre....	36.2	31.2	21.3	28.5

The production and average yield last year in this group was brought up by good crops in Missouri, Kansas and Nebraska. The other four states (Ohio, Indiana, Illinois and Iowa) had a crop little better than that of 1881, as follows:

	1879.	1880.	1881.	1882.
Total.....	828,176,100	719,815,000	509,400,000	558,628,000
Per acre....	36.5	31.3	22.6	26.5

Last year was a backward one, as this has been, and the corn was rather later on the 10th of July than this year; but there was no cold August then and no early frosts.

We see that in the production of these four states there has been a difference of 319 millions between the maximum, in 1879, and the minimum, in 1881, worth probably considerable more than \$100,000,000. It was a crop like that of 1879, or at least 1880, that was hoped for, and it was unusually desirable in these states this year, because their important winter wheat crop has been a failure.

The severer frosts, the ones which have done serious damage to corn, seem to have extended down as far as the Council Bluffs line of the Northwestern, and in some cases considerably further south, but in eastern Iowa less generally than in Illinois, and in western Iowa not at all. Further north in Illinois, and in eastern Iowa about as far south as the Illinois Central, but not in northwestern Iowa, the damage seems to have been general.

Of the great corn-growing states, then, only the northern fifth of Illinois, and the northern third of Iowa, perhaps half-way across the state from the Mississippi, seem to have had the greater part of the corn badly damaged. The news so far received from Central Dakota and further south is that corn (which is an important crop in Southern Dakota) was not injured there. Further south doubtless some damage was none here and there which in the aggregate will make a considerable amount.

It is thus but a small fraction of the corn-growing country which has suffered much. We may take all the northern tier of states, where great damage doubtless was done, as equivalent to Indiana, but all the rest of the country which has suffered to an important extent has, we should say, less than 3,000,000 acres of corn, which if the frost had held off till October might have produced perhaps 100,000,000 bushels. There is as yet no means of judging of the amount of damage there. If it were as much as 25 per cent., however, the 25 millions of loss there added it to 30 or even 40 millions further north will not be a very important part of the whole corn crop. It will be important to certain localities and certain carriers, however. Roads in Southern Wisconsin and Minnesota and Northern Illinois and Iowa will have smaller earnings for a year or more to come because of last week's frosts. The injury will not be a tithe what it would have been, however, had the frosts been as heavy a hundred miles further south. Nowhere where great damage has been done, except possibly in parts of Northern Illinois and Iowa, is corn the chief crop.

We needed all the corn we could get this year after two poor crops, and this makes the damage the more regrettable. It is quite possible that the production will still be a little more than last year, if we have no more frosts, but that was by no means a satisfactory crop east of the Missouri.

Without the frost we would probably have had this year about the average yield of 1880. What we have already had will not, for the whole district, reduce it as much as two bushels per acre, if the reports are accurate as to the area where corn has been killed and the amount of damage in that area; but it must be confessed that the reports are very imperfect, and that it will be a work of great labor to make an approximately correct estimate; as there is scarcely any part of the country where the damage does not vary greatly; in many localities only late corn on low ground will suffer from a frost, in others all corn on low ground; in others late corn everywhere, so that a minute knowledge of each locality is required in order to calculate the injury. It is, perhaps, quite as likely to be underestimated as overestimated, as in places where frost is said to have done "no damage to speak of" it

is very likely to have killed small patches in the fields, and scattering ears that were behindhand.

To a number of railroads it is quite as important that nothing should happen to discourage immigration as that they should have good crops this year. It is remarkable that though the frost was very severe in North Dakota, it has done little damage (so far as reported) in any of the country that has been settling rapidly of late. In North Dakota and Northwestern Minnesota scarcely any corn is grown. What there is was probably all killed. In Central Dakota, where the Northwestern and the Milwaukee & St. Paul have a large mileage of new road, and where some corn is grown, the few reports say the frost was too light to do harm. The course of the severest cold seems to have been south by east from the Red River Valley, so that not only Southern Dakota but Western Iowa escaped.

A good corn crop has seemed to us of very great importance to many railroads and to the general business of the country this year, which is our reason for giving so much attention to this subject. If there had been a killing frost as far south as Springfield, Ill., it would have been a public calamity from which the whole country, and the railroads particularly, would have suffered greatly. What we have had is enough to prevent harvesting a large crop; if we have no more (and the probability is that we shall not) we shall have a fair crop, and many parts of the West a large one; but with the failure of the winter wheat crop and a much reduced cotton crop, the crop year as a whole will be below the average and not nearly as favorable as last year, when all crops were good but corn, and corn as good, perhaps, as we are likely to have this year.

#### Disturbances in Trunk Line Business.

The Joint Executive Committee meeting last week was held to take into consideration charges of cutting east-bound rates. As we have shown elsewhere, the Erie ever since March or April has delivered an unusually large proportion of the grain received at New York. Not only this, but of east-bound freight generally it has been carrying an unusually large share. Some time ago a considerable portion of the large shipments out of Chicago by the Chicago & Grand Trunk were carried from Buffalo by the Erie. The exceptionally large shipments by the Chicago, St. Louis and Pittsburgh this year have chiefly gone east by the New York, Pennsylvania & Ohio and the Erie. The Chicago & Atlantic had a large traffic as soon as it opened, all going to the Erie; from other places than Chicago the Erie also took an unusually large proportion of the freight. It has been a time of light traffic when there was no "overflow" which a new line could get easily because the old ones were crowded. The shipments over the roads which have increased were chiefly the freight of large shippers, such as packing houses and millers, which can be diverted from one road to another by a little advantage in rates, but not easily in any other way; while the smaller shipments are little affected by secret low rates and rebates. The conclusion drawn by all its competitors was that the Erie was cutting rates. Whether any other evidence of this was presented than the diversion of traffic we do not know. The railroad managers think it evidence enough. Whether this competition has been met by any of the other lines does not appear; but the fact that the diversion has been considerable and has lasted so long is evidence that it has not been met generally, and we hear of no complaints against other roads except the Grand Trunk, which last spring was generally believed to be cutting. It then did a large business for New York in connection with the Erie. Recently it has given the Erie much less business but has had large shipments to Montreal.

The regular course of procedure when rates are cut by one of the trunk lines is to reduce rates publicly and make the regular rate the same as the cut rate. If this were always followed, it would take away all motive for cutting rates. If one road can get several car-loads a day by a rebate of three or five cents per 100 lbs., which it cannot get at regular rates, it is strongly tempted to grant the rebate, and will make money by it if its rates on other traffic are not affected; but if it knows that if found out (as it probably will be), the rates on all its through traffic will be reduced in proportion, it may lose a thousand times as much as it makes on the shipment so secured.

This is a costly remedy, however. It might cost the railroads \$250,000 in a single week. Moreover, rates once reduced are not always easily advanced. Further, in the state of the money market this year an open reduction of rates to meet a cut might be looked upon as an incipient railroad war and have disastrous effects on the credit of the railroads, which without it



has not been as good as their managers would like. In a word, the railroads have not been doing very well, and their managers have been very, very cautious about doing anything which might result in a considerable temporary loss. Under these circumstances, actions which at another time would result in open war or a general, but regular, reduction of rates, are borne with unusual patience. The manager who at another time might instruct his agents to contract for a year for all the freight they could get, at whatever rate would secure it, having to face stockholders who expect a dividend and not feeling sure of making net earnings enough to pay one, develops a meekness hitherto unexpected. The shrewd rate-cutter takes advantage of this and presumes to do what at another time he would not venture.

All these things it is necessary to take account of; but it still remains probable that if the Joint Executive Committee always and instantly on evidence of a cut rate made the cut rate the open one, it would soon—as soon as all the railroads became satisfied that this would be done—put an end to cutting.

At the meeting last week, it can hardly be said that anything was done except to renew pledges. All promise not to do so any more, but we do not see that any guarantees have been given that did not exist before. We suppose, however, that it is generally understood that if rates are cut hereafter there will be a general reduction. It is not easy to see how else the difficulty can be met, and this is a heroic remedy, for it may possibly spoil the whole business of the fall and winter, though we do not think it would. None of the roads, we believe, not even the most venturesome, can afford to see the fall and winter business spoiled, and a general reduction would not last long, we think.

The recent increase of traffic makes trouble of this kind much less probable. The newer roads are usually not provided with facilities for handling a large share of a large traffic. When the shipments out of Chicago amount to 25,000 tons a week it is easy to carry a fourth or a third or even a half of it. When they run up to 50,000, 60,000 or 70,000 tons it is another matter, and a road may be blocked with a quarter of it.

But it is not at all satisfactory to depend upon increase of traffic to prevent the violation of co-operative contracts. The value of co-operation depends upon its success in preventing violations of agreements. When competition is most reckless a pressure of traffic causes rates to be maintained. What the railroads co-operate for is to maintain rates when they will not maintain themselves.

It will be seen that this trouble concerning east-bound rates does not rise because of the new line from New York to Buffalo—the Lackawanna line. That road seems to have carried very little through east-bound freight. It has rail connections with Chicago, which ought to serve it well for this purpose; but since navigation has been open it has been able to command a connection by steamboats, and these alone we should have expected to bring it more east-bound freight than it has carried. But with the west-bound traffic it is different. It has secured a considerable portion of the immigrants and of the freight, especially low-class freight. In this its competition is felt most by the Erie, which has a larger proportion of low-class than of high-class freight. The Lackawanna has not got this traffic without making concessions from the regular rates, however—at least all the roads but the Lackawanna say so—and its competition has not always been borne patiently.

Considering how little east-bound freight this road has, and that it carries anthracite to Buffalo as well as merchandise from New York, it is possible that the current of west-bound traffic is more nearly equal to the east-bound on it than on any other road. Its presence complicates the situation, certainly, but not much, so far, for east-bound freight, and there seems little disposition to quarrel over west-bound, though one of the roads which has not carried its percentage in the pool is said to have been making it up by cutting—a process which the other roads will observe with great complacency if it does not continue to cut after it has made up; as they would otherwise have to give it at full price what it is taking at a reduced price.

It must be confessed that this is not a satisfactory condition of things. It has not, so far, caused large losses to any one, however. All the information we can get agrees that the amount of traffic on which reductions have been made is but a small proportion of the whole. The roads which make the reductions of course do not make them on all their traffic, though the tendency is for a larger and larger proportion of the shippers to get them; and most of the

roads have not made them. But this state of things cannot continue. If it does not grow better it will certainly grow worse. We believe an open railroad war extremely improbable, but it is possible; and if one last through the winter there will be some railroad wrecks for sale soon after.

Passenger business is not altogether harmonious on the lines of the Joint Executive Committee, though there are perhaps no more disturbances than usual. This has not yet been brought down to strict regularity. The traffic, we believe, has been very good—better than freight, comparatively—and except the immigrant traffic which the Lackawanna has taken we do not know that there has been any notable change in the currents of travel from one road to another.

#### Chicago Through Rail Shipments Eastward.

The total through shipments of freight eastward from Chicago by the eight roads in the last ten days of August were 60,748 tons, against 56,877 in the corresponding ten days of last year, when there was a great and sudden increase over the shipments of previous weeks, equal to what has been going on more gradually since July this year. The shipments for the last 10 days of the month were at the rate of 39,165 tons per week, and compare as follows with the shipments in corresponding weeks for three years previous:

	1880.	1881.	1882.	1883.
Tons.....	40,801	63,831	37,902	39,165

Thus the shipments this year were 34 per cent. more than last year, 38 per cent. less than in 1881 (when rates were half as high as this year and last), and 4 per cent. less than in 1880. The comparison with 1880 is the most significant one. That was an extremely favorable season, and in this last week of August the shipments were larger than they had been before since June, or were afterward until after the middle of October. The indications now are that shipments will increase rather than decrease, and if they do not decrease they will be larger than in any other September except 1881.

The percentages of the total shipments carried by each road in the last ten days of August this year were:

	1883.	1882.	1881.	1880.
N.Y. & N.E. L.	4.0	13.5	6.6	17.7
Chic. & A.	13.5	6.6	17.7	21.0
B. & O.	6.6	17.7	21.0	15.2
C. & St. L.	17.7	21.0	15.2	10.2
C. & G. T.	10.2	15.2	10.2	11.8

The shipments by the two new roads thus amounted to 19 per cent. of the whole, leaving the shipments of the other six at the rate of 31,528 tons per week. For seven successive weeks the shipments by these roads have been, in tons:

	July 14.	July 21.	July 28.	Aug. 4.	Aug. 11.	Aug. 18.	Aug. 25.	Aug. 31.
	27,456	27,603	24,453	29,058	26,459	31,563	31,528	31,528

The shipments by the eight roads have been reported only for August, and have been:

	Aug. 7.	Aug. 14.	Aug. 21.	Aug. 28.	Aug. 31.
	33,487	32,432	38,500	38,500	30,165

For the month of August the Chicago shipments for five successive years have been, in tons:

	1879.	1880.	1881.	1882.	1883.
	162,263	169,314	260,608	138,241	165,168

Omitting the exceptionally heavy shipments in 1881, caused chiefly by the rates of 12½ and 15 cents per 100 lbs., and the exceptionally small ones last year, due to dearth of grain and provisions, last August was about an average one. The rates were higher in 1880, but lower in 1879; but it was during August in 1879 that rates were restored. As there were two more roads this year, the average traffic of each was less than last year even.

The approximate earnings from the August shipments have been as follows in the several years:

	1879.	1880.	1881.	1882.	1883.
	\$835,941	\$1,015,890	\$783,700	\$691,305	\$825,844

They were this year 20 per cent. more than last year, and 5.4 per cent. more than in 1881, when the shipments were near 58 per cent. greater, but were 19 per cent. less than in 1880 and 1.2 per cent. less than in 1879.

For the eight months ending with August the Chicago shipments have been:

	1879.	1880.	1881.	1882.	1883.
	1,796,193	1,514,080	1,889,397	1,322,643	1,458,552

This year the figures lack the shipments made by the Nickel Plate and the Chicago & Atlantic previous to August. These roads carried about 20,700 tons in July and 14,000 in June, but very little previously, only the Nickel Plate having been open earlier. Making allowance for the new roads, the shipments this year were probably about the same as in 1880, less than in 1879 and 1881, and only 14½ per cent. more than last year. The shipments by the two new roads in August were 27,996 tons, so that the the shipments of the six old roads which were open in previous years were 1,430,556 tons this year, which is

8 per cent. only more than last year, 24 per cent. less than in 1881, 5½ per cent. less than 1880, and 20 per cent. less than in 1879. Thus the common statement that no matter how many new roads may be built, the traffic will soon become large enough to keep them all busy, has proved false for the through shipments of this greatest of interior traffic centres.

This year opened with extraordinarily large shipments; the first four months of the year were followed by a period of extraordinarily light shipments; August brings us what we may call average shipments. The shipments in each of the eight months for five successive years have been:

	1879.	1880.	1881.	1882.	1883.
January.....	192,512	163,378	263,872	321,166	257,073
February.....	198,541	166,541	264,331	325,816	229,212
March.....	238,438	318,863	212,021	170,145	287,465

	1879.	1880.	1881.	1882.	1883.
Three months.....	649,511	648,902	680,224	726,127	767,780
April.....	298,042	186,543	275,417	138,475	147,129
May.....	280,355	125,157	171,432	115,322	141,011
June.....	260,234	223,977	242,463	115,805	123,889
July.....	145,788	160,187	259,253	95,939	113,575

	1879.	1880.	1881.	1882.	1883.
Four months.....	984,419	695,864	948,565	494,041	525,604
August.....	162,263	169,314	260,608	131,875	165,168

	1879.	1880.	1881.	1882.	1883.
Eight months.....	1,796,193	1,514,080	1,889,397	1,322,643	1,458,552
Four months.....	675,543	795,560	999,920	806,288	.....

What we call the winter period was exceptionally favorable this year and last (but only in the traffic, not in earnings, last year); the spring period was extraordinarily unfavorable both years. August was bad last year, but about equal to the average this year. Allowing 20,700 tons to the two new roads in July, we have this year a gain of 30,893 tons (23 per cent.) in August over July, which is more than in any other year except last, when the July shipments were the smallest of any month on record. This large increase was not occasioned by shipments of the new crops so much as by crop prospects, for very little of the shipment was wheat, and it was mostly corn and provisions, which were the products of last year's crops. There have been considerable shipments of new winter wheat, but a very small part has gone by way of Chicago. The fall in prices has probably had more to do with increasing the shipments than anything else, unless it is better prospects for corn. The recovery in August improves the outlook for fall traffic. Shipments are usually not much greater in September than in August, but if corn matures they will probably be larger this year, as when the farmers see that they are sure of having a considerable surplus they will hasten to market their old corn before prices fall. But a considerable fall in prices might reduce shipments.

It will be seen that the shipments of the last four months of the year were larger last year than in any other except 1881, during the railroad war. Rates have been maintained every year in these months except in 1881. In 1879 they were 30 cents per 100 lbs. till Oct. 13, 35 then till March. In 1880 they were 30 till Nov. 27, and 35 thereafter. In 1881 probably 12½ cents was about the average, rates being very irregular, but always very low. In 1882 the 25-cent rate lasted till Dec. 1, when a 30-cent rate took its place.

If the corn crop all ripens we should have a heavy eastward movement this fall and winter, or fall or winter. The wheat crop is comparatively small, but there is a considerable surplus of old wheat, and the European crop is so much less than last year that a good demand for all our breadstuffs is probable. The demand has not been, and is not now, at all pressing, because there is a considerable surplus of old wheat in Europe, which need be in no haste to import supplies for some time, though it will be obliged to get them in large quantities before the crop-year is over. If this condition of things lasts till December and results in small rail shipments eastward for three months, it will probably be an advantage rather than a disadvantage to the railroads.

If there is a heavy movement in the three fall months, the lake vessels and canal boats will get the most of it, and what the railroads take they will have to carry at a low rate. If there is a light movement in the fall, a heavy winter movement will be almost inevitable, and the railroads will get the whole benefit of it and be able to obtain a somewhat higher rate. There should be from this time, too, a much heavier provision movement than for two years past. The stock of hogs, which was cut down greatly in consequence of the very short corn crop of 1881, there has been time to replenish, and it is doubtless much larger than last year. If a market can be found for meats, we should see something like the shipments of provisions that there were before 1881, when the packing in the Northwest was more than a third greater than last year. Further, though there has been a very poor winter-wheat crop, there has been a good crop of spring wheat and a large increase in acreage, nearly all of which is tributary to Chicago, while the winter wheat is not, and



in addition the chief increase in spring wheat has been in Western Minnesota and Dakota, whose product is mostly ground before reaching Lake Michigan, and so is forwarded almost wholly by rail. These things tend to increase the rail shipments of Chicago, but their effect may be felt but slightly for some time. Prices and the dispositions of farmers to accept them as they stand now will have much to do with it.

Heretofore, however, to do well the railroads had to do more than last year. For the remainder of the year they will do well if they carry as much as last year. In September and October the Chicago shipments were only moderate then, however; they were made large by heavy shipments in November and December.

#### Chicago, Burlington & Quincy Earnings and Expenses.

The Chicago, Burlington & Quincy Railroad, which shows an enormous increase of gross and net earnings in June (\$500,752 gross and \$478,565 net, equal to 35 and 93 per cent.) reports a comparatively moderate but still large one in July, in which month the gross earnings were \$187,842 more than in June last year, but \$113,211 less this year. The expenses were larger in July than in June this year and less last year, and these together leave but a small increase in net earnings. Gross and net earnings and working expenses in July for the two years have been:

	1883.	1882.	Increase.	P. c.
Earnings.....	\$1,824,705	\$1,623,006	\$201,699	12.8
Expenses.....	1,039,750	873,820	165,930	19.0
Net earnings.....	\$784,955	\$751,186	\$33,769	4.5

The gross earnings this year are the smallest since February, and the expenses have been exceeded only in April and May, and the net earnings are a little below the monthly average of the year so far. This road's July earnings are likely to be somewhat below the average, as then usually shipments of farm produce are light from stations on its lines.

For eleven successive years the miles worked, the gross and net earnings and working expenses of this road in July have been:

Year.	Miles.	Gross earnings.	Expenses.	Net earnings.
1873.....	1,308	\$879,195	\$583,119	\$296,076
1874.....	1,308	884,313	558,110	325,903
1875.....	1,208	943,463	491,028	452,435
1876.....	1,342	814,175	537,068	276,507
1877.....	1,620	829,299	459,179	370,120
1878.....	1,656	946,425	573,971	372,455
1879.....	1,733	963,823	507,045	356,778
1880.....	1,597	1,773,043	749,393	1,023,650
1881.....	2,712	1,888,358	942,495	945,863
1882.....	3,108	1,625,090	873,820	751,186
1883.....	3,230	1,824,705	1,039,750	784,955

The gross earnings of the month were thus larger this year than in any other except 1881, but the expenses were considerably larger this year than in any other, and the net earnings, though 4½ per cent. more than last year, were 17 per cent. less than in 1881 and 23 per cent. less than in 1880—the first year of the union with Burlington & Missouri River in Nebraska—though the company is working 633 miles of road (24 per cent.) more than then. The expenses were but 42½ per cent. of the earnings in 1880; this year they were 57 per cent. But such fluctuations in expenses are common enough between different months of the same year, and this year in March the expenses were but 41 per cent. of the earnings.

The gross and net earnings and working expenses for the seven months ending with July this year and last have been:

	1883.	1882.	Increase.	P. c.
Earnings.....	\$13,229,908	\$10,770,681	\$2,459,227	22.8
Expenses.....	7,063,407	6,138,923	924,484	15.0
Net earnings.....	\$6,166,501	\$4,631,758	\$1,534,743	32.8

Little more than a third of the very large increase in earnings for the seven months has been absorbed by the increase in expenses, leaving the very large increase of \$1,525,000 (32½ per cent.) in net earnings for the seven months, while the sum required to pay 8 per cent. on the additions to the stock and the funded debt, including the issue for Hannibal & St. Joseph stock, will be but about \$1,100,000 for the whole year. Thus the great improvement over last year is manifest, though it should be said that the earnings were exceptionally heavy in the last four months of last year.

For eight successive years the earnings and expenses for these seven months ending with July have been:

Year.	Gross earnings.	Expenses.	Net earnings.
1876.....	\$6,490,753	\$3,532,202	\$2,958,551
1877.....	6,352,936	3,800,221	2,552,715
1878.....	7,394,216	4,217,542	3,146,674
1879.....	7,504,062	4,226,412	3,277,650
1880.....	17,433,248	5,397,117	12,036,131
1881.....	10,986,905	5,883,099	5,103,806
1882.....	10,780,622	6,138,923	4,641,699
1883.....	13,229,908	7,063,406	6,166,502

Thus the gross earnings, which grew less from 1880 to 1882, were not only larger this year than last, but were 15 per cent. more than in 1880; and though the expenses were also much larger this year than ever before, and 31 per cent. more than in 1880, the net earnings also were larger this year than ever before, though but \$130,371 (2.16 per cent.) more than in 1880. This is, to be sure, a small gain in view of the addition of 630 miles of road; but it should be remembered that 1880 was a year of extraordinary prosperity for this road, the surplus after paying 8 per cent. on the stock amounting then to \$3,000,000, or \$5.50 per share of stock.

This is the only great road west of Chicago which reports working expenses monthly, and we give special attention to its reports because they afford the best clue we possess to the course of expenses and profits of a large number of im-

portant dividend-paying roads. It belongs, however, rather to the southwestern than to the northwestern group of Chicago roads, which have some quite distinct features. It is too far south to get much spring wheat, except from Nebraska, which is the southernmost district which grows much spring wheat, while all the roads north of it, except the Rock Island (which is north of it in Iowa but not in Illinois), are great carriers of spring wheat. But it is the greatest of corn and hog carriers, and probably more of these are grown on its line than on the parallel lines next north across Iowa, on which, however, these staples are also the most important farm produce. The Rock Island's traffic is, in many respects, similar. The Burlington, however, is peculiar in having a great system of roads in Nebraska south of the Platte—an exceptionally fertile country—while no other Chicago road has lines in Nebraska.

The new harvest should affect the Burlington road favorably. Kansas and Nebraska have nearly as large crops as the unprecedented one of last year; Iowa's crop of small grains is exceptionally large, and everything but corn is unusually large in Northern Illinois; and this road has but a small mileage in the winter wheat country of Illinois, where the crop was a failure. At this writing it is known that some corn in Illinois and Iowa has suffered damage by frost, but it is the southernmost road in Iowa, and the frost of Friday night did no damage on it. This crop is of overwhelming importance on its Iowa lines. It has been exceptionally light for two years; and a full crop would be a great advantage to the road.

#### The Erie's Lead in New York Grain Receipts.

We noticed in reviewing the New York receipts for the seven months ending with July, that the Erie had been for some time bringing more grain to New York than the New York Central. This lead was maintained in August, when the deliveries by the different railroads were in bushels (flour and grain):

	N. Y. Cen.	Erie.	Penna.	Lackawanna.	Total.
Bushels.....	2,170,038	2,630,841	1,526,810	159,677	6,525,847
Per cent.....	33.2	40.3	24.4	2.5	100.0

The Erie's percentage was even larger in August than in any other month, but its gain over July was at the expense of the Lackawanna and not the New York Central. The Lackawanna carried less than in any other month since January, though the total New York rail receipts were the largest since March. Indeed, the receipts by the Lackawanna were wholly insignificant in August, not being half as great as those brought by coasting vessels. If, then, it has been cutting rates on east-bound grain, as has been reported at times, it has not effected anything by it, while it certainly has got quite a respectable amount of west-bound freight at New York.

The receipts of rail grain by each road at New York last year were:

	N. Y. Cen.	Erie.	Penna.	Total.
Bushels.....	4,569,816	2,287,775	2,105,809	9,000,968
Per cent. of total.	50.8	25.4	23.5	100.0

The New York Central falls from 50.8 per cent. of the whole last year to 33.2 this year; the Erie rises from 25.4 to 40.3. The Pennsylvania carried exactly the same proportion of the whole both years. With a decrease of 2,475,000 bushels in the total rail receipts, the Erie gained 343,600 bushels (15 per cent.), while the New York Central lost 2,400,000 bushels (53 per cent.). This is the third month that the Erie has brought more grain to New York than the New York Central or any other road, but they have been months of comparatively light rail receipts, so the amount which it carried has not been very great. For six successive years the total receipts of grain at New York by the Erie in these three months ending with August, during which the Erie has led this year, have been as follows:

	1878.	1879.	1880.	1881.	1882.	1883.
Bushels.....	5,550,171	8,058,496	8,911,414	11,150,905	5,610,178	5,838,620

Thus it carried but little more this year than last, which until August was an extremely bad season, and it carried but a little more than half as much as in 1881, when, however, its and other roads' traffic was swelled by the low rates of the railroad war, and more than 3,000,000 less than in 1880, when rates were higher than this year.

But if with a large proportion the Erie does not compare favorably with years when it had a much smaller proportion, conversely the New York Central must make a very large decline from its traffic of those seasons when it had a much larger proportion of a much larger traffic. The number of bushels carried by it to New York in the corresponding three months of these six years have been:

	1878.	1879.	1880.	1881.	1882.	1883.
Bushels.....	11,831,533	15,928,315	15,120,501	14,133,312	9,006,824	4,813,009

The New York Central, thus, compared with last year, lost 4,250,000 bushels, while the Erie gained 228,000, and its grain deliveries this year are much smaller than in any other—not one-third as much as in 1879 and 1880. Thus we may say that the season has been remarkable, not so much for what the Erie has gained, as for what the New York Central has lost. The traffic has yielded it about \$300,000 this year, against \$567,000 last year, and \$835,000 in 1880—in the best year perhaps 10 per cent. of its total earnings.

The meeting of the Joint Executive Committee last week showed that this great diversion of the leading staple of through traffic has not been made without attracting attention. It is, we believe, the unanimous opinion of the other railroad companies that it has been made by the Erie or its Western connections, or both, giving lower than regular rates, while these were maintained by the New York Central and the other roads carrying to New York. It cannot be attributed to the opening of the Chicago & Atlantic, because the diversion began before the Chicago & Atlantic

was open, and moreover the old connections of the Erie have been carrying an exceptionally large proportion of the freight from Chicago. It has freight lines over the Chicago, St. Louis, Pittsburgh and the Grand Trunk as well as the Chicago & Atlantic.

Much has been said of the great effect of the free canal this year. The canal has brought grain to New York in August as follows:

	1878.	1879.	1880.	1881.	1882.	1883.
Bushels.....	5,992,921	7,653,895	9,492,029	4,505,495	4,284,000	4,492,661
P. c. of total	34.0	42.0	54.0	29.9	33.44	42.50

Its traffic cannot be called large this year, but it was a larger proportion of the whole than it has been in most years. The receipts previous to 1882 above are the total water receipts, and the percentages throughout are those of the total receipts by water. Very rarely are these as much as 500,000 bushels more than the canal receipts.

The canal receipts, too, show a large falling off in August compared with the other months since navigation opened, though the total receipts were larger. The amounts and percentages by canal have been:

	May.	June.	July.	August.
Bushels.....	3,774,110	6,231,910	5,600,012	4,492,661
P. c. of total	59.1	57.0	60.9	39.6

In May the canal was open only part of the month, which accounts for the small canal receipts then. The percentage in August is much less than in July and June. When there are heavy shipments from Chicago and Milwaukee, the circumstances are most favorable for the canal; Chicago shipments did not become large in August until near the end of the month. It is probable that the canal will have a larger traffic and a larger proportion of the whole in the fall months. The comparatively high rates received in August, however, indicate a scarcity of boats. Canal receipts in some years have been more than 10,000,000 bushels per month in the fall.

#### August Earnings.

In this and the previous issue of the *Railroad Gazette* we have published the earnings of 64 railroads for the whole month of August and of three more for three weeks of that month. These roads had in the aggregate 50,458 miles of road last year and 55,729 this—an increase of 5,271 miles, or 10.4 per cent. The earnings increased from \$27,099,867 last year to \$29,217,270 this, a gain of \$2,117,403, or 7.8 per cent. Their average earnings per mile decreased from \$537 to \$524½, or 2½ per cent., which is similar to the course of earnings for some months previous. Yet only 12 of the 67 roads had a decrease in total earnings, the chief of which are 2.9 per cent. on the Central Pacific, 6.6 by the Eastern Illinois, 12.1 by the Evansville & Terre Haute, 6 by the Illinois lines and 4.9 per cent. by the Iowa lines of the Illinois Central, 12.3 by the Lake Erie & Western, 23 by the Alton & Terre Haute Main Line, 19 by the Belleville Line, 3.2 by the St. Louis & San Francisco, 21.5 by the Manitoba, and 4.3 by the Union Pacific.

No less than 10 roads that reported a decrease in July had an increase in August, while only the Iowa lines of the Illinois Central and the International & Great Northern, which had an increase in July, report a decrease in August. Further, of those which had losses both months, six had smaller losses in August than in July, and only three had larger ones. Those which gained in August but lost in July are:

	Loss in July.	Gain in August.
Burlington, Cedar Rapids & Northern.....	\$2,287	\$7,601
Chicago & West Michigan.....	5,127	5,108
Detroit, Lansing & Northern.....	1,639	15,361
Green Bay, Winona & St. Paul.....	449	213
Hannibal & St. Joseph.....	12,281	748
Marquette, Houghton & Ontonagon.....	37,032	1,469
Missouri Pacific.....	29,574	44,779
Ohio Central.....	842	27,469
Peoria, Decatur & Evansville.....	27,921	758
St. Louis & Cairo.....	4,592	7,015
Wabash.....	202,428	7,297

Last year there was a heavy wheat movement but a light corn movement from Kansas, Missouri and the Ohio Valley in July and August; this year a light movement of both in July, but a pretty large total grain movement in August. The great improvement of the Wabash is reflected in the gain receipts at Toledo and Detroit, which were 1,237,155 bushels in July and 5,645,822 in August—an increase of 357 per cent., while the increase in total Northwestern receipts was 94 per cent. At St. Louis and Peoria the percentage of grain was much larger than at Chicago, while there was a loss at Milwaukee. This may serve to indicate how some of the railroads were affected by the grain movement. Last year the total grain movement increased but 25 per cent. from July to August, being much larger than this year in July and considerably smaller in August. The favorable change of the Missouri Pacific, the Hannibal & St. Joseph and perhaps the Peoria, Decatur & Evansville may be accounted for in this way. But there are many other roads which show a considerable gain over July not to be accounted for in this way, as the Chicago & Northwestern, the Northern Pacific, the Manitoba (which lost largely in August, but considerably less than in July), the Canadian Pacific, the Illinois lines of the Illinois Central (which lost not half as much as in July), the Indiana, Bloomington & Western, the Texas & Pacific and the Eastern, not to be accounted for in this way.

The change from a loss to a gain on the Marquette, Houghton & Ontonagon is due mostly to a gain from July to August this year, but partly to a decline last year, the earnings having been:

	1883.	1882.
July.....	\$140,776	\$177,828
August.....	167,871	168,402

It has been reported that there was a considerable improvement since July in the iron ore traffic, which supports this road and the Northwestern's Menominee line, and these



figures confirm the report, and are some indication of an improvement in the iron trade.

The Southwestern roads, except the International, all show gains, but in the aggregate not quite so great as in July, none of the Texas roads doing as well. Of 13 Southern roads this side of the Mississippi, nine made larger gains than in July, and all gained. The greatest improvement was by the Illinois Central Southern Division, the Mobile & Ohio, the Louisville & Nashville and the Columbia & Greenville. August is the end of the crop year for the Southern roads, which was a most favorable one in all respects. The new crop year, which begins with September, is less so.

#### Record of New Railroad Construction.

This number of the *Railroad Gazette* contains information of the laying of track on new railroads as follows:

*Gainesville, Jefferson & Southern*.—Extended from Hochtston, Ga., southward to Jug Tavern, 10 miles. Gauge, 3 ft.

*Pittsburgh, McKeesport & Youghiogheny*.—Completed by laying track from McKeesport, Pa., to Boston, 3 miles, and from near West Newton, Pa., to New Haven, 21 miles.

This is a total of 34 miles of new railroad, making 3,584 miles thus far this year. The total new track reported in our columns to the corresponding date for 12 years past has been as follows:

	Miles.		Miles.
1883.....	3,584	1877.....	1,223
1882.....	6,940	1876.....	1,556
1881.....	4,235	1875.....	746
1880.....	3,288	1874.....	1,022
1879.....	1,863	1873.....	2,507
1878.....	1,273	1872.....	4,623

The statements include *main track only*, no account being taken of second tracks or other additional tracks or sidings.

THE AUGUST GRAIN MOVEMENT was heavy at the Northwestern markets, where the receipts for the five weeks ending Sept. 1 for years have been, in bushels:

	1879.	1880.	1881.	1882.	1883.
27,658,870	33,230,015	37,880,793	36,889,689	28,801,310	34,408,561

The average for these six years has been 34,812,374 bushels, or very near the receipts this year.

The shipments have been:

	1879.	1880.	1881.	1882.	1883.
29,327,251	29,062,749	32,854,112	27,008,619	24,293,114	28,275,630

The shipments this year were thus about a fifth larger than last year and a little larger than in 1881, but smaller than in the other years—a little less than the average of the six Augusts.

The Atlantic receipts this year do not make so favorable a comparison. They have been:

	1879.	1880.	1881.	1882.	1883.
32,533,538	38,932,409	37,762,593	27,694,583	28,720,086	21,761,602

Thus this year the August shipments were a fourth less than last year and more than 40 per cent. less than in 1879 or 1880. The average of the five years before this year has been 32,930,000 bushels, and this year's receipts are a third less.

The exports of the five weeks from Atlantic ports have been for four years, including flour, which is not included above:

	1880.	1881.	1882.	1883.
30,569,289	23,054,000	24,428,960	18,180,452	

This year the exports have been a fourth less than last year and but half as great as in 1880.

This accounts for the falling-off in Atlantic receipts. The grain not being required for export, a smaller amount has supplied the demand at those ports. But that there should be such large shipments from the Northwestern markets while the seaboard cities have taken so little is an indication that the interior demand has been unusually large. The Atlantic receipts have generally been more than the shipments from the Northwestern markets; in 1880 they were 5 millions and in 1879 10 millions more; but this year they are 6½ millions less. It is easy to lay too much stress on this change, especially in considering the movement of a single month. The Northwestern shipments are some time in reaching the seaboard, and those by lake and canal, which form the larger part, are usually more than three weeks on the way, so when a light movement is followed by a heavy one, the Atlantic receipts do not become heavy for some time after the Northwestern shipments have been so.

The distribution of the Northwestern receipts shows great changes from July, as is usual, because of the marketing of the new crops affecting the Southern markets most thus early in the season. Chicago and Milwaukee received 68.8 per cent. of the whole in July and only 53.7 in August; but Toledo, Detroit and Cleveland, which received but 8.3 per cent. of the whole in July, had 20 per cent. in August. St. Louis also made a large gain in August (from 14.7 to 17.4 per cent. of the whole).

In Atlantic receipts there are also great changes from July, for the same reason, the chief being Baltimore's obtaining 26.7 against 15.0 per cent. of the whole. August is usually Baltimore's great month, but when there is an early and heavy winter wheat movement July is also usually a good month for it. What profits Baltimore usually profits Philadelphia also, a little later and to a less extent. It received 9.6 per cent. of the whole in August against 5.3 in July. The gains of these two have been at the expense of New York, whose percentage fell from 60.5 to 44.2. These features in the distribution are common at this season. Baltimore's receipts usually fall off largely after August, while New York's increase; and Chicago's also increase while St. Louis' fall off. The change at Chicago began before the end of August, in the last two weeks of which it received more than 55 per cent. of the whole.

Though the total receipts in August were larger than in any other month of the year, the Milwaukee receipts were

smallest then. It was the very end of its crop year, and scarcely any spring wheat has been received as yet. When that begins to move the Milwaukee receipts will increase.

THE SUBJECT OF STANDARD TIME is now before the railroad managers of this country, demanding not simply approval but action. It will be remembered that at the spring time conventions the proposition of Mr. W. F. Allen, Secretary of both these conventions, to adopt for North America five standard times, exactly an hour apart, namely the time of 60, 75, 90, 105 and 120 degrees west of Greenwich, was unanimously approved, and Mr. Allen was instructed to send information concerning the new standards proposed to the managers of all the railroads, and endeavor to have them adopt them. This information has been given by Mr. Allen in the completest way by means of two maps of the United States, on one of which all the railroads having the same time standards at present are colored alike, and on the other they are colored in accordance with the proposed uniform standards. The map showing the present standards makes a striking picture of the existing complexity. There are different times close alongside. A line run by Philadelphia time projects through a net-work of lines run by New York time; in some places there are several kinds of railroad time; and in the United States there are no less than forty-nine time standards, which by the proposed change will be reduced to four; for the time of the 60th meridian will apply only to the British maritime provinces. Roughly speaking, the time of the 75th meridian, which it is proposed to call "Eastern time," will apply to all the railroads of New England, New York, Pennsylvania, Maryland, the two Virginias and the two Carolinas, the exception being the extension of the 90th meridian time ("Central time"), to Buffalo, Pittsburgh and the other Western termini of the trunk lines; while in Canada "Eastern time" will extend to Detroit and Lake Huron. The chief points of junction between "Eastern" and "Central" time are Sarnia, Detroit, Buffalo, Pittsburgh, Wheeling, Parkersburg, Huntington, W. Va., Bristol, Tenn., Gastonia, N. C., Augusta, Ga., and Charleston, S. C. This time is four minutes slower than New York time, one minute faster than Philadelphia and eight minutes faster than Washington time.

But by far the larger part of the railroad system of the country will come under "Central time," or that of the 90th meridian, which is but one minute faster than St. Louis time, three minutes slower than Vicksburg time, just New Orleans time, and nine minutes slower than Chicago time. It takes in all the railroads from Buffalo, Pittsburgh and Savannah to the Missouri River in Dakota, nearly to the Colorado line in Nebraska and Kansas, and the whole of Texas except a little corner from New Mexico south to the Rio Grande. Nine-tenths of the railroads of the country come under these two times. The 105th meridian (Denver) and the 120th (the line between California and Nevada) naturally cover a small mileage.

Whether a time which in some places will be half an hour from solar time will be adopted for general use is questionable; but for the railroads the proposed standards are certainly a great improvement on the present confusion, and perhaps as likely as any that could be proposed to come into general use.

Mr. Allen has studied out the subject thoroughly, and has prepared "translation tables" by which the proposed standard can be substituted for any one of the fifty existing standards without any computing. A large number of important railroads have agreed to adopt these standards if the majority of the roads in their district do so, and at the coming time convention it is hoped that something may be effected.

CHICAGO TRAFFIC has suddenly become very heavy. In the week ending Sept. 1 the grain receipts there were 5,155,000 bushels. Last week they were reported as 5,887,000 bushels. The latter figures are not quite correct, but the correction may make them larger instead of smaller. These are the largest receipts that Chicago has ever had in a single week. The other weeks when it has received more than 5,000,000 bushels are:

	May 29, 1880.	Oct. 9, 1880.	July 2, 1881.	Sept. 1, 1883.
	5,459,038	5,014,957	5,366,872	5,155,434

The receipts of wheat increase at Chicago, but they are not by any means large—only 923,000 bushels last week, which is not one-sixth of the whole. More than half of the receipts were corn, and 27 per cent. were oats. We shall perhaps be best able to judge of the amount of injury to corn by frost by the course of the Chicago receipts hereafter. If a great deal of damage has been done, or the farmers think so, there will be a great and immediate reduction in receipts.

The rail shipments from Chicago also continue to increase, though not nearly in proportion to the increase in receipts. The incomplete report for the week ending Sept. 8, of through and local shipments eastward of flour, grain and provisions gives the total as 40,994 tons, against 30,087 tons in the corresponding week of last year and 37,543 tons in the previous week of this year.

For the five weeks past the grain receipts in bushels and these eastward shipments in tons have been:

	Aug. 11, 1889.	Aug. 18, 1889.	Aug. 25, 1889.	Sept. 1, 1889.	Sept. 8, 1889.
Bush. received, 2,524,974	3,326,931	4,019,291	5,155,434	5,887,000	
Tons shipped, 26,808	29,176	34,465	37,543	40,994	

The increase in grain receipts from the first to the last of these weeks was 133 per cent. in rail shipments, 53 per cent.

The rail shipments are, however, the largest since March, though much smaller than in any week of the first three months of the year, when they averaged more than 50,000 tons. For the season, however, they are large shipments, exceeded in but few weeks when navigation was open and rates maintained.

Of the shipments last week 3,213 tons (7.8 per cent.) were by the Nickel Plate and 7,160 tons (17.5 per cent.) by the Chicago & Atlantic; the latter carried more than any other road, while the Chicago, St. Louis & Pittsburgh, which formerly carried less from Chicago than any other road except the Baltimore & Ohio, stood next, carrying 6,332 tons, or 15.4 per cent. of the whole.

THE COTTON CROP is reported by the Department of Agriculture to have been in a condition on the 1st of September which is but 74 per cent. of an entirely good condition, having been materially injured during August by drought everywhere except in Florida and Tennessee. But the condition a year ago, when the crop was the largest ever known, was only 91. This makes a reduction in condition from last year of 18½ per cent. The acreage planted is 3 per cent. more than last year, and the change in condition applied to the increased acreage would make the crop 16 per cent. less than last year—a crop of 5,874,000 instead of 6,992,000 bales. This estimated crop has been exceeded, however, only in 1880 and 1882.

September does not say the last word for the cotton crop, however, and the reports of the Department of Agriculture are apparently less accurate for this than for the grain crops. There can be no doubt, however, that the crop will be considerably less this year than last, and that this will be a misfortune to the Southern railroads. It is, however, at worst, not so poor a crop as in 1881, and, what is very important, it is not accompanied by the failure of all grain crops in the South, as in that year. The corn crop is below an average in the South, but not much. The decrease in the cotton crop indicated above at current prices would be worth about \$50,000,000; but cotton is sure to be higher if our crop is small than if it is large, because this country is the great source of supply. This is not the case with grain. Our wheat crop may be a bad failure and yet the price in Europe be low. The reduction in the cotton yield is not nearly so important as that in the winter wheat yield. The latter appears to be as much as 85 million bushels, worth as many dollars, which is a reduction of 22 per cent. from last year's winter wheat crop. The only important crop which is larger than last year is spring wheat, unless, indeed we include oats, of which there was an enormous crop last year, but perhaps a larger one this. This large crop of oats, by the way, comes very handy to help eke out the corn crop.

PROVISION EXPORTS show a great increase in July, after a long period of great depression. There is a gain in the month of no less than 55½ per cent. in beef, tallow and dairy produce (which have been increasing throughout the year), and one of 75 per cent. in hog products, which have been very small for a long time. The greatness of the increase is largely due to extremely small exports last year, it is true; but still they were large, exceeded in previous Julys only in 1879 and 1880. For six years the exports of hog products in July have been, in thousands of pounds:

	1877.	1878.	1879.	1880.	1881.	1882.	1883.
42,598	70,163	91,638	102,597	67,570	47,113	79,968	

It was time that these exports should increase, for the decrease in the last two years has been formidable. For the seven months ending with July, the exports have been, in thousands of pounds:

	1877.	1878.	1879.	1880.	1881.	1882.	1883.
427,591	723,986	740,090	805,404	671,716	429,967	404,775	

Thus, in spite of the July gain, the exports this year have been 6 per cent. less than last year, 40 per cent. less than in 1881, and nearly 50 per cent. less than in 1880. These are our most important exports, next to breadstuffs and cotton, and it was a serious misfortune that they should have fallen off so greatly. It ought to be possible to vastly increase these exports, as we can supply cheap meat to hundreds of millions who would be glad to get it. They are not always able to pay for it, however, and when bread is dear they have little to spare for it. With the present low prices of breadstuffs, and tolerable prosperity among European laborers, there should be a market for all the provisions we can spare. But the decrease in the exports in the last two years has not been due to lack of a demand—for prices have been high—but to lack of corn first and lack of hogs next. Both these deficiencies are likely to be made good this year or next.

QUARTERLY FINANCIAL REPORTS are to be required hereafter of the New York railroad companies by the Railroad Commission. Doubtless many railroad companies will be strongly opposed to this, but it seems to us one of the measures for the protection of the owners of railroad properties which may properly be required. It will be easy to make the requirement unduly onerous, and if announcements of all new issues of capital were required before they were made, a statement of earnings and working expenses should suffice, and should be made monthly instead of quarterly. Something is to be said for the complaint that enforced publicity on the part of the railroads of one state puts them to a disadvantage as against competitors in another state where publicity is not required, but not much. As things are, a company may be taking a downward course for months, unknown to its owners, except those concerned in its management, who may take advantage of their knowl-



edge; and in a time of advance the same is true. There is, besides, a great value in complete reports of railroad earnings as an index to the general condition of business. The uncertainties and wastes of industry are to be escaped, if at all, by complete statistics of commerce and industry. So important are statistics of production that we would be inclined to justify a good deal of interference with private business, let alone railroads, to secure them. A sort of current census of production, the capacity of productive enterprises, and trade movements might obviate most of the panics and prevent enormous losses of misapplied capital and labor.

THE REPORT OF ERIE EARNINGS AND EXPENSES, which is usually issued for each month about seven weeks after its expiration, is but just out for *May*, and so is two months later than usual. There is the very large increase of \$374,190 (22 per cent.) in gross earning for the month, which are one-third larger than in April, and much more than the road had ever earned in any previous month of any year, the largest theretofore having been \$1,899,910, in October, 1880. But the working expenses increased even more than the earnings—\$395,494, or 38 per cent.—so that there is a slight decrease in net earnings, from \$652,359 to \$631,053. This, however, is a larger amount than in any previous month of the fiscal year since November.

There is nothing in the statement, as issued, to indicate whether the earnings of the leased New York, Pennsylvania & Ohio are included. The Erie began operating this road in May, and the increase of earnings and expenses over previous months of this year are so large that we suspect that they include those of this leased line.

WESTERN UNION PROFITS do not seem to have suffered much from the strike, if we may trust the statement made in declaring a dividend for the quarter ending with September. According to this the actual net earnings for the quarter ending with June were \$1,639,897; while for the quarter ending with September, "based upon nearly completed returns" or July, partial returns for August, and estimating for September, they will be about \$1,650,000. As there certainly was a great falling off in business during the strike, to make these net earnings there must have been an equal reduction of expenses. Doubtless there was a great saving in not having the striking employees to pay, but with the heavy extra pay to operators working overtime and the high wages to others, who only in this way could be tempted to go back for a time to positions which they had given up for something better, it was hardly to be expected that the reduction in expenses should equal that in earnings.

THE NORTHWESTERN GRAIN MOVEMENT has suddenly become immense. In the last week of August the receipts of the eight markets were 9,163,000 bushels, which is more than has ever been received in a single week before except in 1880, when there were four weeks when the receipts were a little larger. The wheat movement, however, is much less than last year, and substantially the whole gain is corn. In July the average weekly receipts of these markets were 3,476,000 bushels. In the five weeks following they have run as follows:

	Week ending—				
Aug. 4.	Aug. 11.	Aug. 18.	Aug. 25.	Sept. 1.	
5,017,993	5,565,206	7,044,128	7,616,540	9,163,388	

It is not uncommon for the receipts to be about the largest of the year at this time: they were last year. But this is usually when there is a heavy movement of winter wheat, which is wanting this year. If corn turns out well we may have even larger receipts in October, when the spring wheat is coming forward.

THE SMALLNESS OF ATLANTIC GRAIN RECEIPTS is noticeable. Ordinarily they are much greater than the reported shipments of the eight Northwestern markets, as the Atlantic ports receive from a great many inferior points from which the grain reaches them without passing through a lake port or other place that reports grain receipts. But in every month since March last the Northwestern shipments have exceeded the Atlantic receipts, as follows:

	April.	May.	June.	July.	August.
N. W. ship- ments....	14,041,865	19,358,896	20,966,194	12,987,639	28,275,630
At. rec'ts...	9,581,914	14,346,348	15,857,296	11,273,997	21,760,630
Difference..	4,458,951	5,012,548	1,978,938	1,713,642	6,515,000

In the five months the Northwestern shipments were 95,630,197 bushels and the Atlantic receipts 19,679,002, or 20 per cent., less than that amount.

This indicates an unusually great domestic consumption in the country between the West and the seaboard.

LAKE RATES have advanced a little—to 4½ cents a bushel for corn and 5 cents for wheat from Chicago to Buffalo.

Canal rates have also made a further advance to 6 cents for corn and 6½ for wheat from Buffalo to New York—exceptionally high rates—in spite of which the canal gets about three-fourths of the Buffalo shipments.

Ocean rates have changed but little of late. Recent quotations are 3½d. to 3¼d. per bushel for grain, by steam from New York to Liverpool.

#### The Murphy Locomotive.

Mr. D. E. Grove, of St. Louis, formerly of the Dallas & Wichita and the Texas & Pacific roads, writes as follows: "Supplementary to your article on the Murphy Locomotive, of Aug. 31, I beg to add that it is susceptible of proof that 20 years ago the Master Mechanics of the 'Rheinische' Railroad system in Germany concluded to try a locomotive of the identical principle of the Murphy; but the impossibility of working it was ascertained before the drawings were commenced."

## General Railroad News

### MEETINGS AND ANNOUNCEMENTS.

#### Meetings.

Meetings will be held as follows:  
*Chicago & Eastern Illinois*, annual meeting, at the office in Chicago, Oct. 2.  
*Denver & Rio Grande*, special meeting, at the office in Colorado Springs, Col., Oct. 6.  
*Louisville & Nashville*, annual meeting, at the office in Louisville, Ky., Oct. 8. Transfer books close Sept. 20.  
*Minneapolis & St. Louis*, annual meeting, at the office in Minneapolis, Minn., Oct. 2.  
*Western Union Telegraph*, annual meeting, at the office in New York, Oct. 10. Transfer books close Sept. 20.

#### Dividends.

Dividends have been declared as follows:  
*Lehigh Valley*, 2 per cent., quarterly, payable Oct. 13 to women only; to all others, Oct. 15. Transfer books close Sept. 17.  
*Missouri Pacific*, 1½ per cent., quarterly, payable Oct. 1. Transfer books close Sept. 20.  
*Nashville, Chattanooga & St. Louis*, 2 per cent., payable Oct. 1.  
*New York Central & Hudson River*, 2 per cent., quarterly, payable Oct. 15. Transfer books close Sept. 15.  
*Sunbury & Lewistown* (leased to Pennsylvania Railroad Co.), 3 per cent., payable Oct. 1.  
*Western Union Telegraph*, 1½ per cent., quarterly, payable Oct. 15. Transfer books close Sept. 20.

#### Railroad and Technical Conventions.

The *National Association of General Passenger & Ticket Agents* will hold its semi-annual meeting at the Grand Pacific Hotel in Chicago, Sept. 18.  
The *Master Car-Painters' Association* will hold its annual convention at the Carrollton Hotel, Baltimore, beginning on Wednesday, Sept. 19.  
The *New England Road-Masters' Association* will hold its first annual meeting in Boston, Sept. 20.  
The *American Street Railway Association* will hold its next meeting in Chicago, Oct. 9.  
The *American Institute of Mining Engineers* will hold its autumn meeting in Troy, N. Y., during the second week in October.  
The *General Time Convention* will hold its fall meeting at the Grand Pacific Hotel in Chicago, Oct. 11.  
The *Southern Time Convention* will hold its fall meeting at No. 46 Bond street, New York, Oct. 17.  
The *American Association of Railroad Superintendents* will hold its fall meeting in Washington, Oct. 25.  
The *American Society of Mechanical Engineers* will hold its annual meeting in New York, in the week ending Nov. 3.

#### Railway Traveling Auditors' Association.

The fourth annual convention of this association was held in Buffalo, N. Y., Sept. 12, with a large attendance. The usual routine business was transacted, and important changes were made in the by-laws. It was decided to hold the next convention in Chicago.

#### American Society of Mechanical Engineers.

The annual meeting of the society will be held in New York City during the week ending Nov. 3. Detailed programmes will be sent out later. Members who have papers to present at this meeting are requested to send the titles to the Secretary, and to furnish him their manuscripts as early as possible, that they may be put in type in advance of the meeting. Drawings for reproduction should be in black and white, and should be forwarded considerably before the date of the meeting. The address of Mr. F. R. Hutton, the Secretary, is No. 15 Cortlandt street, New York.

#### New York Railroad Commission.

A dispatch from Albany, N. Y., Sept. 11, says: "The Railroad Commission to-day heard arguments for and against its recent recommendation that quarterly reports of the financial condition of railroad companies be required. Mr. Barker, Financial Agent of the Boston & Albany Railroad; Mr. E. D. Hinsdale, of the Long Island Railroad, and Mr. J. B. Brunsdell, of the Lake Champlain & Mohawk Railroad, were heard in turn. The Commission was convinced that the different railroad companies could make quarterly reports, and even oftener if required, without serious trouble, and the resolution that the roads make such reports was adopted. Commissioners O'Donnell and Rogers voted in the affirmative, and Commissioner Kernan dissented. Mr. Kernan was in favor of monthly reports."

### ELECTIONS AND APPOINTMENTS.

*Albany & Susquehanna*.—At the annual meeting in Albany, N. Y., Sept. 4, the following directors were chosen: Thomas Dickson, David Dows, Minard Harder, Henry M. Olmstead, Robert M. Oliphant, W. L. M. Phelps, James Roosevelt, Henry Smith, James R. Taylor, Charles Tracy, John Westover, George I. Wilbur, Coe F. Young. The road is leased to the Delaware & Hudson Canal Company.

*American Society of Civil Engineers*.—At the regular monthly meeting held in New York, Sept. 5, the following elections were announced:  
As Fellows: John Lawler, Prairie du Chien, Wis.; Albert Conro, Milwaukee, Wis.; Alexander Mitchell, Milwaukee, Wis.; D. L. Wells, Milwaukee, Wis.; Chas. L. Colby, Milwaukee, Wis.; E. P. Allis, Milwaukee, Wis.; F. de Garay, Mexico.  
As Members: Andrew Bell, Carillon, Canada; Henry I. Bliss, La Crosse, Wis.; Wm. W. Card, Pittsburgh, Pa.; Frank C. Doran, Richmond, Ind.; George Downes, Ranwick, Sydney, New South Wales, Australia; Christopher L. Gates, Milwaukee, Wis.; Wm. H. Jennings, Columbia, O.; Alton P. Man, Jr., St. Louis, Mo.; Daniel McCool, Marquette, Mich.; Wallace McGrath, Parkersburg, W. Va.; John L. P. O'Hanly, Ottawa, Canada; Geo. W. Polk, San Antonio, Tex.; Watson W. Rich, St. Paul, Minn.; Leonard W. Rundlett, St. Paul, Minn.; Edward H. Williams, Philadelphia, Pa.

As Associates: Joseph P. Card, St. Louis, Mo.; Geo. F. Swain, Boston, Mass.  
As Juniors: George B. Francis, Portland, Oregon; Alfred W. Trotter, New York; Fredk. N. Willson, Princeton, N. J.; Herbert M. Wilson, New York.

*Canada, La Crosse & Southwestern*.—The directors of this new company are as follows: J. L. Gates, Neillville, Wis.; C. F. Ainsworth, Wm. T. Price, Black River Falls, Wis.; George T. Gund, A. Hirschheimer, G. C. Hixon, G. R. Montague, La Crosse, Wis.; L. W. Reynolds, Boone, Ia.

*F. A. Roziene*, Charles City, Ia.; W. H. Roach, James Wadsworth, New York. The board elected Wm. T. Price President; G. R. Montague, Vice-President; R. Calvert, Secretary; Joseph Clarke, Treasurer.

*Chattanooga Union*.—The directors of this new Company are: C. E. James, E. A. James, J. W. James, A. L. O'Connell, D. J. O'Connell. Office in Chattanooga, Tennessee.

*Chicago & Atlantic*.—At the annual meeting in Huntington, Ind., Sept. 7, the following directors were chosen: Jarvis M. Adams, C. L. Atterbury, G. J. Bippus, O. W. Childs, Hugh J. Jewett, T. A. Lewis, J. Condit Smith, J. Schiff, C. C. Waite. The board re-elected Hugh J. Jewett President; J. Condit Smith, Vice-President and General Manager.

*Cleveland, Mt. Vernon & Delaware*.—E. C. Janes has been appointed General Agent of this road, with headquarters at Akron, O. He will have special supervision of the business of Cuyahoga Falls, Akron and New Portage. W. M. Griswold, Agent at Cuyahoga Falls, and E. E. Beam, Agent at New Portage, will remain in charge of their respective stations, as heretofore.

*Connecticut & Passumpsic Rivers*.—At the annual meeting in Newport, Vt., Sept. 5, the old board was re-elected as follows: S. S. Thompson, Lyndonville, Vt.; T. P. Redfield, Montpelier, Vt.; Stephen Foster, Stanstead, P. Q.; Alden Speare, Newton, Mass.; Emmons Raymond, Cambridge, Mass.; W. K. Blodgett, Amos Barnes, C. W. Pierce, F. A. Peters, Boston. The board elected Emmons Raymond, President; W. K. Blodgett, Vice-President; H. E. Folsom, Superintendent; Henry C. Cleveland, Secretary; N. P. Lovering, Treasurer. The only change is the choice of Mr. Cleveland as Secretary in place of his father, the late Elijah Cleveland.

*Dexter & Newport*.—This company on Sept. 7 elected directors as follows: George A. Abbott, George N. Alden, A. F. Bradbury, Nathaniel Dustin, George Hamilton, W. W. Harris, Charles Shaw. The road is leased to the Maine Central.

*Flint & Pere Marquette*.—The following appointments are made to take effect Sept. 10: Mr. A. Patriarche, Assistant General Freight Agent vice Mr. W. J. Duddleson, deceased, office, East Saginaw, Mich.; Mr. L. C. Whitney, General Western Agent vice Mr. A. Patriarche, office, Milwaukee, Wisconsin.

*Fulton County Extension*.—At the annual meeting in Lewistown, Ill., Aug. 30, the following directors were chosen: A. C. Atherton, John A. Gray, Henry Phelps, Moses Turner, James C. Willcoxon, Lewistown, Ill.; Josiah Braden, S. H. Mallory, T. M. Stuart, E. A. Temple, Charleston, Ia. The board elected S. H. Mallory President; James C. Willcoxon, Vice-President; W. J. Dyck, Secretary; Moses Turner, Treasurer.

*Fulton County Narrow-Gauge*.—At the annual meeting held in Lewistown, Ill., Aug. 30, the following directors were chosen: For one year, T. M. Stuart, J. C. Willcoxon, I. C. Worley; for two years, T. L. Frazier, A. Mallory, Henry Phelps; for three years, Joseph Braden, S. H. Mallory, Moses Turner; for four years, A. C. Atherton, John A. Gray, E. A. Temple. The board elected officers as follows: President, S. H. Mallory, Charleston, Ia.; Vice-President, Henry Phelps, Lewistown, Ill.; Secretary, W. J. Dyck, Lewistown, Ill.; Treasurer, Moses Turner, Lewistown, Ill. Mr. A. C. Atherton is Superintendent and General Freight and Ticket Agent.

*Harrisburg, Portsmouth, Mt. Joy & Lancaster*.—At the annual meeting in Philadelphia, Sept. 7, the following directors were chosen: A. J. Cassatt, Lewis Elkin, John P. Green, John M. Kennedy, Wistar Morris, George B. Roberts, N. P. Shortridge, Edmund Smith, James Younz. The road is leased to the Pennsylvania Railroad Company.

*Iron Mountain & Helena*.—Mr. F. M. Green has been chosen President in place of Wm. Bailey.

*Island*.—The officers of this company are: Franklin D. Locke, President; George Von Berge, Engineer. The office is in Buffalo, N. Y., where the road is located.

*Martin's Creek & Stroudsburg*.—The officers of this new company are: President, Geo. B. Roberts; directors, A. D. Barclay, J. N. DuBarry, John P. Green, Wm. A. Patton, Strickland Kneass, Frank Thomson. It is controlled by the Pennsylvania Railroad Company.

*Nashville, Chattanooga & St. Louis*.—At the annual meeting in Nashville, Tenn., Sept. 12, the following directors were chosen: James G. Porter, J. H. Imman, V. K. Stevenson, J. W. Thomas, G. A. Washington, Thomas C. Whiteside, G. M. Fogg, J. W. Childress, Thomas Lipscomb, T. W. Evans, M. H. Smith, E. L. Jordan, J. T. Rhea, Henry Earl, A. S. Colyar. The directors met and re-elected the old officers.

*Northern Pacific*.—The following circular from General Manager Herman Haupt is dated St. Paul, Minn., Sept. 1: "Nelson C. Thrall, former Private Secretary to General Adna Anderson, Chief Engineer, has been appointed Chief Clerk in the office of the General Manager of the Northern Pacific Railroad, and will enter upon duty from this date. C. S. Fee, formerly Chief Clerk, has been appointed Assistant Superintendent Passenger Traffic for Eastern Divisions." Mr. W. J. Footner has been appointed General Superintendent of the Northern Pacific Express Co., with office in St. Paul.

*Ohio Central*.—At the annual meeting, Sept. 12, the following new directors were chosen: A. F. Goodnow, Brayton Ives, George Moore and J. S. Staunton, all of New York. The new directors represent the bondholders.

*Owensboro & Nashville*.—Taking effect Sept. 1, Mr. O. M. Dunn is appointed Superintendent vice Col. R. S. Bevier, resigned. Mr. Dunn's duties will extend to the line now under process of construction, and his instructions will be obeyed accordingly. Taking effect same date, Col. R. S. Bevier will be placed in charge of the legal department of the company as Chief Attorney.

*Pennsylvania*.—The board has elected Mr. A. J. Cassatt a director, in place of Mr. Samuel M. Felton, resigned. Mr. Cassatt was formerly Vice-President of the company.

*Railway Traveling Auditors' Association*.—At the annual meeting in Buffalo, Sept. 12, the following officers were chosen: President, A. A. Post, New York & New England; Vice-President, Richard Fenby, Missouri Pacific; Secretary and Treasurer, W. L. Hecker, Louisville, New Albany & Chicago.

*Richmond & Danville*.—At the special meeting in Richmond, Va., Sept. 12, Messrs. H. C. Fahnestock, John McAnerney and Samuel Thomas were chosen directors in place of M. B. Brown, R. Baring Gould and John A. Rutherford.

*Rome & Boonville*.—Mr. A. M. Martin, of New York, is President, and T. G. Nock, of Rome, N. Y., Vice-President of this new company.



**St. Paul, Minneapolis & Manitoba.**—At the adjourned annual meeting the following directors were chosen: James J. Hill, St. Paul, Minn.; R. B. Angus, Donald A. Smith, George Stephen, Montreal; Marshall Field, D. Willis James, John S. Kennedy, New York. The board re-elected James J. Hill President; John S. Kennedy, Vice-President; Edward Sawyer, Secretary and Treasurer; Edward T. Nichols, Jr., Assistant Secretary and Transfer Agent.

**Southern Central.**—Mr. Charles A. Warden, General Freight and Passenger Agent of this road, having died Aug. 30 last, until further notice all communications relating to the business of the department should be addressed to Henry L. Rich, Chief Clerk, at Auburn, N. Y.

**Syracuse, Ontario & New York.**—The officers of this company, successors to the Syracuse, Chenango & New York, are: President, E. F. Winslow; General Manager, Charles Paine; Superintendent, Albert Allen. The road is now owned by the New York, West Shore & Buffalo.

**Western Union Telegraph.**—Mr. C. C. Baldwin has been chosen a director in place of J. Lowber Welsh, resigned. Mr. Baldwin is President of the Louisville & Nashville Company.

**Winona, Alma & Northern.**—The directors of this new company are: H. Finkelnburg, Fountain City, Wis.; Richard R. Kempler, Alma, Wis.; J. C. Traer, Vinton, Ia.; J. W. Traer, Cedar Rapids, Ia.; C. W. Tracy, Oskaloosa, Iowa.

### PERSONAL.

—Mr. C. J. Eddy has resigned his position as Commercial Agent in Chicago for the Chicago, Milwaukee & St. Paul road, and will engage in other business.

—Mr. Charles A. Warden, for 13 years past General Freight and Passenger Agent of the Southern Central road, died at his residence in Auburn, N. Y., Aug. 30 last.

—Mr. Richard H. Woodward has resigned his position as Superintendent of the Sandy Hook Division of the New Jersey Southern road. He has been connected with the road for 20 years.

—Mr. W. J. Duddleson, Assistant General Freight Agent of the Flint & Pere Marquette Railroad, died at his home in East Saginaw, Mich., Sept. 3. He was highly esteemed as a faithful and capable officer.

—Mr. Samuel M. Felton has resigned his position as a director of the Pennsylvania Railroad Co., on account of the pressure of his duties as President of the Pennsylvania Steel Co. Mr. Felton has been a director for 22 years.

### TRAFFIC AND EARNINGS.

#### Grain Movement.

For the week ending Sept. 1 receipts and shipments of grain of all kinds at the eight reporting Northwestern markets and receipts at the seven Atlantic ports have been, in bushels, for the past eight years:

Northwestern shipments.				
Year.	Northwestern receipts.	Total.	By rail.	By water.
1876	4,240,764	4,192,884	1,808,411	431
1877	5,015,253	4,598,004	1,993,998	216
1878	8,402,587	6,605,490	1,318,419	19
1879	7,759,560	5,137,970	1,445,917	251
1880	6,677,289	6,333,351	1,232,330	337
1881	8,520,758	5,104,559	2,517,395	493
1882	8,600,419	5,363,641	2,745,645	509
1883	9,163,688	6,868,033	2,697,604	393

This was truly a week of heavy movement in the Northwest. The receipts of the eight markets there were 1,033,000 bushels more this year than last (though that was the week of the largest receipts in 1882), and larger than in the corresponding week of any preceding year. They were also 1,547,000 bushels more than in the preceding week of this year, and larger than in any week since October, 1880. In the last week of July and in three weeks of October in 1880, these receipts were slightly exceeded, but at no other time in the history of the trade. The gain over previous weeks of this year is almost wholly in corn and oats, as the wheat receipts have been comparatively stationary for four weeks; and in this last week of August were little more than one-fourth of the whole, while corn was nearly 40 per cent. and oats 27 per cent. The gain is chiefly at Chicago, which has a gain of 1,136,000 bushels over the previous week, and of 1,823,500 over the week before that, when the total increase was 1,547,000 and 2,119,000, respectively. There is also a large gain at Peoria. This indicates that the new oats and old corn of Nebraska, Iowa and Illinois have been coming forward.

The shipments of these markets were also larger than in the corresponding week of any previous year, and were 1,474,000 bushels more than last year. There were 962,000 bushels more than in the previous week of this year, and were the largest of the year with the exception of two weeks just after navigation opened. The rail shipments were nearly the same as last year, but larger than in any other year—larger even than in 1881, when rates were but half as much as now. The shipments down the Mississippi were 154,003 bushels, or 2.2 per cent. of the whole.

The receipts of the Atlantic ports, on the other hand, are smaller than in the corresponding week of any previous year since 1877, and 1,779,000 bushels less than last year. These receipts have been so far below the Northwestern shipments that it seems that the interior consumption of grain must have been exceptionally large this year. The Atlantic receipts are 175,500 bushels more than in the previous week of this year, and are the largest since August of last year. The receipts at New York have increased and are the largest since November; the Montreal receipts are much larger than recently; the Baltimore receipts nearly a fourth less than the week before, and the smallest since July.

Exports from Atlantic ports in this week ending Sept. 1 for four years have been:

	1880.	1881.	1882.	1883.
Flour, bbls.	111,002	139,393	171,269	128,988
Grain, bu.	6,667,814	3,322,468	4,118,767	2,535,688

Total bu., 7,200,233 3,904,751 4,888,477 3,116,134

The exports are thus 1,772,000 bushels less than last year 788,000 less than in 1881, and 4,084,000 (57 per cent.) less than in 1880.

For the seven months ending with July the exports from all United States ports are reported by the Bureau of Statistics as follows:

	1883.	1882.	Inc. or Dec.	P. c.
Flour, bbls.	5,021,130	3,376,334	+ 1,644,796	48.7
Wheat, bu.	33,694,557	43,347,989	- 10,253,432	23.6

Flour and grain, bu. 15,689,620 58,541,462 - 2,851,872 4.9

Corn, bu. 28,730,260 10,525,251 + 29,205,009 27.8

Other grains. 2,622,670 1,410,377 - 1,383,652 97.5

Total. 18,222,879 70,486,080 + 27,736,790 30.3

Value. \$65,328,532 \$81,324,578 + \$14,003,954 17.2

As the crop of wheat last year was 504 millions against

380 in 1881, it seems astonishing that the exports of wheat and flour should have been smaller this year. The decrease has been in shipments from the Pacific coast. These were of the value of \$22,984,162 last year and of only \$1,707,055 this year. There was everywhere a large falling-off in July, however.

### Railroad Earnings.

Earnings for various periods are reported as follows:

Eight months ending Aug. 31:				
	1883.	1882.	Inc. or Dec.	P. c.
Ala. Gt. Southern	\$637,823	\$497,390	I.	\$140,443 28.2
Bur. Cedar Rap. & No.	1,700,367	1,714,597	D.	5,230 0.3
Canadian Pacific	3,335,922	1,440,813	I.	1,895,109 131.5
Central Iowa	799,130	735,288	I.	63,842 8.9
Central Pacific	15,850,125	16,583,176	D.	733,051 4.4
Chi. & Gt. Trunk	1,862,365	1,339,783	I.	522,582 38.9
Chi. St. P. M. & O.	3,293,599	3,011,194	I.	282,405 8.4
Chi. & W. at Mich.	1,030,617	957,310	I.	73,307 6.0
Cin. Ind. St. L. & Chi.	1,590,908	1,647,149	D.	56,241 3.0
Cin. N. O. & Tex. P.	1,025,565	1,631,809	D.	6,304 0.4
Clev. Akron & Col.	345,693	317,803	I.	28,090 8.8
Detroit, Lan. & No.	1,016,330	1,034,570	D.	18,240 1.7
East Tenn. Va. & Ga.	2,480,713	1,642,705	I.	838,008 50.9
Mem. & Charles	755,597	641,506	I.	114,091 17.9
Ev. & Terre Haute	1,478,559	583,499	D.	1,044,940 18.0
Flint & Pere Marq.	1,046,891	1,366,827	I.	280,064 26.5
Marquette, H. & Ont.	11,446,705	10,582,696	I.	864,009 8.2
Green B. W. & St. P.	249,143	227,184	I.	21,959 9.6
Ill. Cent. Ill. lines	4,197,812	4,473,975	D.	276,163 6.2
Iowa lines	1,230,638	1,214,547	I.	16,091 1.3
Southern Div.	2,465,700	2,015,590	I.	450,170 22.3
Kentucky Central	528,041	457,753	I.	70,288 15.4
Little R. & F. S.	314,110	255,967	I.	58,143 22.7
Little R. & M. R. T.	229,375	155,419	I.	73,956 47.6
Marquette, H. & Ont.	10,702,238	13,814	D.	243,598 29.9
Northern Pacific	5,347,754	4,080,590	I.	1,267,164 31.1
Ohio Central	687,191	627,572	I.	59,619 8.8
Ohio Southern	262,167	290,969	I.	31,198 13.5
Peoria, Dec. & Ev.	454,179	516,021	D.	61,842 12.0
St. L. Alton & T. H.	882,578	908,722	D.	26,144 2.9
Main Line	519,507	552,202	D.	32,695 5.9
Belleville Line	247,743	236,718	I.	11,025 4.7
St. L. & Cairo	2,346,512	2,214,009	I.	132,413 6.0
St. P. & Duluth	302,647	621,771	I.	180,876 29.1
St. P. M. & Man.	5,154,921	5,286,088	D.	131,167 2.5
Union Pacific	18,332,960	18,850,224	D.	517,264 2.7
Vicks. & Meridian	294,490	269,109	I.	25,381 9.3
Wisconsin Central	917,585	.....	.....	.....

Seven months ending July 31: Chi. Bur. & Quin. \$13,229,908 \$10,780,622 I. 2,449,286 22.7

Net earnings. 6,166,501 4,641,699 I. 1,524,802 32.8

Cle. Col. Cin. & In. 2,222,053 2,773,773 D. 551,720 2.3

Five months ending May 31: N. Y. L. Erie & W. \$8,109,916 \$7,543,029 I. \$566,887 7.5

Net earnings. 2,145,419 2,290,549 D. 124,130 5.5

Month of May: N. Y. L. Erie & W. \$2,055,988 \$1,081,798 I. \$974,190 22.2

Net earnings. 631,055 652,359 D. 21,304 3.3

Month of June: St. John & Maine. \$17,422 \$11,032 I. \$6,390 58.1

Net earnings. 6,220 236 I. 5,984

Month of July: Chi. Bur. & Quin. \$1,824,705 \$1,025,096 I. \$799,609 12.2

Net earnings. 784,955 751,186 I. 33,769 4.5

Cle. Col. Cin. & I. 347,599 402,583 D. 54,984 13.6

Ogdensburg & Lake Cham. 61,900 60,400 I. 1,500 2.5

Net earnings. 19,000 13,700 I. 5,300 43.1

Rome, Wat. & Og. 141,556 148,287 D. 6,731 4.3

Net earnings. 51,678 54,209 I. 17,409 51.1

Month of August: Ala. Gt. Southern. \$90,219 \$73,794 I. \$16,425 22.2

Bur. Cedar Rap. & No. 232,922 224,921 I. 7,901 3.4

Canadian Pacific. 120,333 97,550 I. 22,783 23.4

Central Iowa. 2,282,000 2,350,557 D. 68,557 2.9

Chi. & Gt. Trunk. 222,720 158,794 I. 63,926 40.2

Chi. St. P. M. & O. 480,460 422,718 I. 57,742 13.6

Chi. & West Mich. 145,750 125,722 I. 20,028 16.0

Cin. Ind. St. L. & Chi. 242,694 237,466 I. 5,228 2.2

Cin. N. O. & Tex. P. 241,133 228,334 I. 12,799 5.6

Cleve. Akron & Col. 51,270 42,687 I. 8,582 20.1

Detroit, Lan. & No. 150,020 134,659 I. 15,361 11.4

East Tenn. Va. & Ga. 341,639 280,267 I. 61,372 18.0

Mem. & Charles. 102,478 80,585 I. 21,893 27.1

Ev. & Terre Haute. 83,753 65,479 D. 18,274 23.3

Flint & Pere Marq. 109,157 123,905 I. 14,748 13.6

Marquette, H. & Ont. 1,382,730 1,310,838 I. 71,892 5.5

Green B. W. & St. P. 30,935 30,697 I. 238 0.7

Ill. Cent. Ill. lines. 645,155 686,844 D. 41,689 6.1

Iowa lines. 152,701 160,532 D. 7,831 4.8

Southern Div. 281,883 236,585 I. 45,298 19.1

Kentucky Central. 101,173 13,369 I. 27,804 38.1

Lake Erie & West. 148,745 169,715 D. 20,970 12.3

Little Rock & Ft. S. 34,628 34,810 I. 182 0.5

Little St. Miss. R. & T. 25,013 21,641 I. 3,372 15.6

Marq. H. & Ont. 167,871 166,402 I. 1,469 0.9

Northern Pacific. 1,016,650 727,215 I. 289,435 30.8

Ohio Central. 111,664 84,195 I. 27,469 32.7

Ohio & Mississippi. 484,980 468,135 I. 16,845 3.6

Ohio Southern. 40,157 33,483 I. 6,675 19.9

Peoria, Dec. & Ev. 76,481 75,723 I. 758 1.0

St. L. Alton & T. H. 128,082 166,637 D. 38,555 23.1

Main Line. 71,440 88,327 D. 16,887 19.2

Belleville Line. 39,583 32,558 I. 7,025 21.5

St. L. & Cairo. 369,520 381,637 D. 12,117 3.1

St. P. & Duluth. 139,450 104,568 I. 34,882 33.2

St. P. M. & Man. 629,613 801,759 D. 172,146 21.5

Tol. Cin. & St. L. 135,000 86,368 I. 48,632 47.0

Union Pacific. 2,770,000 2,770,000 D. 0 0.0

Vicks. & Meridian. 32,204 27,571 I. 4,633 16.8

Wabash, St. L. & P. 1,779,841 1,772,544 I. 7,297 0.4

Wisconsin Central. 123,176 123,176 I. 0 0.0

First week in September: Chi. Mil. & St. Paul. 501,000 410,464 I. 90,536 22.1

Chi. & Eastern Ill. 40,284 43,258 D. 2,974 6.9

Cin. & Northw. 548,000 500,700 I. 47,300 9.4

Denver & R. G. 166,000 122,800 I. 43,200 35.2

Hann. & St. Jo. 65,300 57,700 I. 7,600 13.1

Long Island. 87,706 83,204 I. 4,502 5.4

Louisville & Nash. 287,500 248,595 I. 38,905 15.0

Mill. L. S. & West. 20,000 17,650 I. 2,350 13.3

St. L. & San Fran. 84,400 81,500 I. 2,900 3.7

For a number of the earnings given above we are indebted to the courtesy of the Commercial and Financial Chronicle.

It should be remembered that the early reports are generally partly estimated, and are subject to correction by later statements.

### Lake Superior Iron Ore.

Shipments of iron ore from the Lake Superior Region, up to Aug. 29, are reported by the Marquette Mining Journal as follows:

	1883.	1882.	Inc. or Dec.	P. c.
From L'Anse	42,305	39,245	I.	3,060 7.8
From Marquette	47,985	655,410	D.	237,425 36.2
From Escanaba	875,783	1,159,750	D.	283,967 24.5
From St. Ignace	19,476	27,095	D.	7,619 28.2

Total. 1,355,549 1,881,509 D. 525,960 28.0

The Marquette shipments show the greatest share of the large decrease from last year. The Escanaba shipments have been partly kept up by the increase of tonnage from the mines in the Menominee District.

### Coal.

Anthracite coal tonnages for the eight months ending Sept. 1, as given by the weekly statements of the companies, were as follows, the tonnage in each case being only that originating on the line to which it is credited:



or 0.3 per cent.; in bituminous, an increase of 100,346 tons, or 13.7 per cent. The most notable feature in the report is the large increase in receipts of anthracite by lake, accompanied by a corresponding decrease in the receipts by rail. The statement does not show the great increase in westward shipments of anthracite which has been reported.

San Francisco coal receipts in August were 86,700 tons. For the eight months ending Aug. 31 they were: 1883, 451,700; 1882, 464,200; decrease, 12,500 tons, or 2.7 per cent. Of the receipts this year 276,300 tons were Pacific Coast coals; 30,600 tons Eastern; 75,700 tons Australian, and 69,100 tons English coal.

Cumberland coal tonnages for the week ending Sept. 8 were 63,809 tons. The total shipments this year to Sept. 8 were 1,676,614 tons.

Provision Exports.

The Bureau of Statistics reports as follows the exports of provisions in July and for the nine months from November to July inclusive:

	July—1883.	1882.	—Nine months—1883.	1882.
<b>Cattle Product:</b>				
Fresh beef.....	8,037,383	1,190,655	79,624,002	40,363,070
Salt beef.....	3,390,015	1,934,661	33,251,507	33,888,235
Tallow.....	5,218,347	2,080,810	35,698,652	35,323,229
Butter.....	2,171,674	756,410	11,610,710	5,740,460
Cheese.....	27,885,014	24,123,124	68,936,149	76,574,955
<b>Total.....</b>	<b>46,711,433</b>	<b>30,085,660</b>	<b>229,121,020</b>	<b>191,794,949</b>
<b>Hog Product:</b>				
Bacon.....	54,928,287	20,122,537	260,428,249	303,490,389
Hams.....	4,227,759	2,447,276	41,885,860	26,614,617
Pork.....	36,096,686	2,427,377	53,796,393	57,390,988
Lard.....	44,715,439	20,856,493	201,840,351	193,966,541
<b>Total.....</b>	<b>79,968,169</b>	<b>45,853,683</b>	<b>557,950,853</b>	<b>581,462,535</b>
<b>Value.....</b>	<b>\$8,392,340</b>	<b>\$5,642,037</b>	<b>\$61,837,505</b>	<b>\$61,837,505</b>
<b>Total lbs.....</b>	<b>126,680,505</b>	<b>75,939,343</b>	<b>87,071,873</b>	<b>773,257,484</b>
<b>Total value.....</b>	<b>\$12,882,165</b>	<b>\$8,976,678</b>	<b>\$84,293,437</b>	<b>\$81,293,715</b>

In cattle products, thus: There was an aggregate increase of over 16 million pounds in July, or 55½ per cent., and in hog products an increase of more than 34 millions, or 75 per cent. For the nine months ending with July, however, while there was an increase of 37 millions (20 per cent.) in exports of cattle product, there was a decrease of 29½ millions (4 per cent.) in the much more important item of hog product, making the net increase only 14 millions, or less than 2 per cent.

Southern Railway & Steamship Association.

The matter of division of business at Athens, Ga., came before the Board of Arbitration at Atlanta, on June 9, 1883. The General Commissioner and the Arbitrator, constituting the Board of Arbitration, were unable to agree on the division of business in this case. Therefore, in accordance with Section 11, Articles of Agreement, of Jan. 17, 1883, they agreed upon a third disinterested party, and Mr. Albert Fink, of New York city, was agreed upon as said party. The award is as follows:

DIVISION OF COTTON AT ATHENS, GA.	
Georgia Railroad Co.....	50 per cent.
Northeastern Railroad Co. of Georgia.....	50 per cent.
DIVISION OF MERCHANDISE AT ATHENS, GA.	
Georgia Railroad Co.....	50 per cent.
Northeastern Railroad Co. of Georgia.....	50 per cent.

The foregoing are average divisions, and the business will be apportioned according to the system heretofore pursued.

Freight Meetings in Cleveland.

A dispatch from Cleveland, O., Sept. 12, says: "There were three important secret meetings of prominent railway freight men held in this city to-day. The Cotton Committee performed the regular annual task of arranging rates on cotton. The lumber pool was in session this forenoon to fix rates. Rates are much higher this season than last, but still there is some cutting. The East-bound Trunk Line Freight Classification Committee held its quarterly meeting this forenoon at the office of J. R. T. McKay, of the Lake Shore Railway. Among those present at the meeting are: John Porteus, of the Grand Trunk; C. L. Cook, of the Pennsylvania; Edgar Hill, of the Cleveland, Columbus, Cincinnati & Indianapolis; Mr. Knight, of the Wabash, St. Louis & Pacific; H. W. Hibbard, of the Vandalia; R. W. Geiger, of the Jeffersonville, Madison & Indianapolis; W. H. Perry, of the Canada Southern; and W. S. Weeks, of the Lake Erie & Western."

Southern Railway & Steamship Association.

A circular from General Commissioner Powers announces the rates on cotton (which are substantially those of last season) taking effect Sept. 1. The rates from leading points are as follows in cents per 100 lbs.:

	Brunswick.....	Petersburg.....	Richmond.....	Baltimore.....	New York.....	Philadelphia.....	Providence.....	Boston.....
Columbia, S. C.....	27	40	51	57	67	75	85	85
Atlanta, Ga.....	45	56	67	75	85	92	92	92
Opelika, Ala.....	52	65	74	82	92	92	92	92
Montgomery, Ala.....	45	56	67	75	85	92	92	92
Albany, Ga.....	..	..	..	76	82	92	92	92

From Albany, Ga. the rate is 36 to Brunswick, and to Savannah 52 cents.

OLD AND NEW ROADS.

**Boston & Maine.**—This company is grading for a second track on its Lowell Branch, from Andover, Mass., to Lowell, about 9 miles. The work is pushed as fast as possible, and it is expected that it will be finished this fall.

**Buffalo, New York & Philadelphia.**—This company has failed for record in Pennsylvania a collateral trust mortgage for \$2,800,000, secured by two first mortgages, one of \$1,600,000 on the Oil City & Chicago road, and one of \$1,200,000 on the Olean & Salamanca road. Both these companies are now merged in the Buffalo, New York & Philadelphia.

**Chattanooga Union.**—This company has been organized to build a belt railroad around the city of Chattanooga, Tenn., with branches extended to connect all the railroads entering the city with the principal mills and furnaces.

**Chicago, Burlington & Quincy.**—This company makes the following statement for July and the seven months ending July 31:

	July—1883.	1882.	—Seven months—1883.	1882.
Earnings.....	\$1,824,705	\$1,625,006	\$13,229,908	\$10,780,622
Expenses.....	1,039,750	873,820	7,063,407	6,138,923
<b>Net earnings.....</b>	<b>\$784,955</b>	<b>\$751,186</b>	<b>\$6,166,501</b>	<b>\$4,641,699</b>

For the seven months there was an increase of \$2,449,286, or 22.7 per cent., in expenses, the result being a gain of \$1,524,801, or 32.8 per cent in net earnings. The ex-

penses were 53.39 per cent. of gross earnings this year, against 56.81 per cent. last year.

**Chicago, St. Paul, Minneapolis & Omaha.**—Preliminary papers have been filed in a suit begun by the Chicago, Milwaukee & St. Paul Co., to recover from this company some 200,000 acres of land in Douglas County, Wis. The land in question is a part of the old St. Croix land grant, and the suit is brought under an agreement made last year, which, it is alleged, provided that the St. Paul Co. should withdraw its claims to the grant and aid the Omaha Co. to obtain it, in consideration thereof receiving one-fourth of all the lands so secured. This agreement, it is charged, the Omaha Co. now refuses to carry out, and the suit is brought to compel it to comply with the conditions.

**Cincinnati, Selma & Mobile.**—A report comes from Cincinnati that the controlling interest in this road, heretofore held by the so-called Erlanger Syndicate, has been sold to the Central Railroad Co., of Georgia. The road extends from Selma, Ala., west by north to Akron, on the Alabama Great Southern road, a distance of 71 miles. The report has not yet been substantiated.

**Connecticut River.**—A large force is now employed on the second track on this road between Northampton, Mass., and Greenfield, 19 miles. It is expected that the second track will be finished to Greenfield, 36 miles from Springfield, before winter.

**Consolidated Railroad Co., of Vermont.**—A hearing was had last week in the United States Circuit Court at Rutland, Vt., on the motion for a preliminary injunction in the suit of Rowland G. Hazard against the Vermont & Canada Railroad and the American Loan & Trust Co., of Boston. This suit is identical with that recently brought in the Massachusetts Supreme Court to prevent the Trust Co. delivering bonds under the compromise agreement with the Vermont Central. It is brought on the assumption that the reorganization agreement is void so far as the Vermont & Canada Co. is concerned, that company having no right to agree to extinguish its stock or to exchange it for the proposed bonds. The defendants claim that the agreement is valid, and that the company in executing it did not exceed its legal authority. The Court granted the temporary injunction.

**Cornwall & Lebanon.**—Work is being pushed on this road by the contractors, Keller & Riley. It is an extension of the old Cornwall road from Cornwall, Pa., southward to Mt. Hope and Manheim, about 10 miles. The old road from Cornwall to Lebanon is being ballasted with slag and limestone.

**Denver & Rio Grande.**—It is stated that the proposed plan for putting this company's finances on a safe footing will not be made public until the special meeting on Oct. 6. It is said that from \$3,000,000 to \$5,000,000 are needed. It is reported that there will be a general mortgage made of sufficient amount to include the present issues and allow a new issue of bonds of sufficient amount to raise the money needed. Another report is that the bondholders will be asked to take an issue of debenture or second-mortgage bonds.

**East & West, of Alabama.**—This company is now running regular trains over the two completed sections of its road, Cartersville, Ga., west to Cedartown, 37 miles, and from East & West Junction, Ala., west to Broken Arrow, 42 miles. Work is to be begun at once on the section of 32 miles from Cedartown to East & West Junction, which will complete the line of 111 miles from Cartersville to Broken Arrow. The company expects to build the line from Gainesville, Ga., to Birmingham, Ala., about 200 miles in all.

**Fargo & St. Louis Air Line.**—Work on the grading of this road has been begun at Ortonville, Dak., by Mr. Jackson, who has the contract for a section from that place northward, including the heaviest work on the projected line.

**Gainesville, Jefferson & Southern.**—Track is reported laid to Jug Tavern, Ga., 10 miles southward from the late terminus at Hochston, and 27 miles from Gainesville. Work is progressing steadily toward Monroe.

**Hanover Junction, Hanover & Gettysburg.**—This company has offered to extend its road from Gettysburg, Pa., northwest to Cashtown, about 8 miles, provided the people on the line will raise \$10,000 toward the cost of the road. From Gettysburg to Biessecker Bridge the old "Tape-worm" grade will be used. The subscription of \$5,000 asked for the building of the York Springs Branch from New Oxford to York Springs has nearly all been raised. The branch will be about 12 miles long.

**Harrisburg & Western.**—Articles of merger and consolidation of this company with the South Pennsylvania Co. have been filed at Harrisburg. The two charters were obtained by the same parties, and covered the same line of road, the Harrisburg & Western charter having been secured to cover certain changes and omissions in the original South Pennsylvania organization. The consolidation, therefore, is entirely formal, and does not change the position or purposes of the company, which is organized to build what is known as the Vanderbilt line from Harrisburg to a junction with the Pittsburgh, McKeesport & Youghiogheny road near Pittsburgh.

**Hartford & Harlem.**—The Connecticut Railroad Commissioners have approved the location of this proposed road from New Britain to New Haven, but have rejected entirely the location through the city of New Haven, which was strongly opposed by the property-owners on the proposed line. This action will oblige the company to find a new location for the road through the city, which will be a matter of considerable difficulty. They also disapproved the location west of New Haven wherever it interferes with that made by the New York & Connecticut Air Line.

**Highland Junction.**—A statement was published this week to the effect that an arrangement had been concluded for a union of interests between this company and the Pennsylvania, Slatington & New England, and that a traffic contract had been concluded with the Philadelphia & Reading Co., under which that company agreed to send 1,000,000 tons of coal yearly to New England by the new route.

In response to this statement President Gowen "authorizes a contradiction of the report that the Reading Railroad Co. has made an arrangement whatever to send coal to New England by the Storm King railroad bridge route. It is true that an ordinary traffic contract has been proposed between the Pennsylvania Slatington & New England Railroad and the Reading Railroad for the customary interchange of traffic, but no coal whatever is pledged or offered to that route as the Reading Railroad Co. desires its coal tonnage for its own lines to Philadelphia and New York, and under no circumstances would agree to divert it to another road."

**Intercolonial.**—Work is now progressing well on the large new passenger station at St. John, N. B., and on the enlargement of the yard and freight station there.

**Island.**—This company has been organized to build a railroad in Buffalo, N. Y., apparently for purpose of connecting the land and docks of the Pennsylvania Coal Co. with other roads entering the city.

**Kingston & Pembroke.**—It is reported that this road has been leased to the Canadian Pacific Co., giving that company's lines a connection with Lake Ontario at Kingston.

**Louisville & Nashville.**—During the year ending June 30 last this company has made extensive improvements in the road-bed and track of its Mobile Division. The Mobile shops have been enlarged and a convenient passenger station built. The receipts and shipments of freight by this road at Mobile have been as follows, in tons:

	1882-83.	1881-82.	Increase.	P. c.
Receipts.....	109,211	98,571	10,640	10.8
Shipments.....	111,820	89,752	22,068	25.3
<b>Total.....</b>	<b>221,031</b>	<b>188,323</b>	<b>33,208</b>	<b>17.7</b>

The receipts included 24,927 tons of Alabama coal for local and steamship consumption. The company has provided special shipping facilities for the truck farmers in the neighborhood of Mobile, whose shipments have formed an important item of freight.

Many improvements have also been made in the New Orleans Division, and the travel to the summer resorts on the Gulf coast has been larger than ever before.

**Massachusetts Central.**—The equipment formerly in use on this road was sold at Hudson, Mass., Sept. 12, under mortgages given by the contractor. The engines and cars were bought by a number of different purchasers, the sale producing about \$60,000 in all.

**Michigan Central.**—Work on the new bridge over the Niagara River for the Canada Southern Division is progressing steadily. The pier or steel tower on the American side is all up, and that on the Canadian side is well advanced. On the line from the bridge to the main line at Welland, Ont., 10 miles of track have been laid and most of the grading done.

**Minneapolis & St. Louis.**—Reports have been current of a consolidation with the Chicago, Rock Island & Pacific Co., but they have been denied by officers of the last-named company.

The St. Paul Globe of Sept. 11 publishes the following regarding the rumored consolidation of the Minneapolis & St. Louis Railroad with the Rock Island by an exchange of stock:

"We get from good authority that such consolidation will not be made until the interested parties can secure more stock of the Minneapolis & St. Louis road, as this is the stock that will be benefited by such exchange. It is stated as a fact that at the last annual meeting of the board of directors of the Minneapolis & St. Louis road, the greatest amount of stock standing in the name of any director was five shares; in other words, the stock had been unloaded at high figures with a view to making a turn and picking it up again at greatly reduced prices. This, we are informed, has only been partly accomplished, the bulk of the stock being yet held. It was thought, by the street. There were very heavy sales of the stock at from 77½ to 65 for preferred, and from 36 to 30 for common stock."

"The explanation of such a ready market for a comparatively unknown stock turned out to be that certain parties who are interested in a connecting road to Lake Superior, and who are also interested in competing roads from Chicago to St. Paul and Minneapolis, have formed a pool, and have been quiet but steady buyers of the stock ever since, with a view to making the Minneapolis & St. Louis a continuation of the Lake line."

"They would accomplish by this, first, the continuation or extension of the line down into a good grain country and good connections with the terminal facilities at Minneapolis; secondly, would cut the Rock Island off entirely as a competitor for Minneapolis and St. Paul business to and from Chicago; and thirdly, one of the principal parties in the pool being at the head of the coal trade for the Northwest, can again control the Iowa coal trade which he lost when his contract was annulled by the Burlington, Cedar Rapids & Northern Railroad, which was done at the instigation of the Rock Island Railroad Co. Which of the two interests, if either, really secured a majority of the stock we are unable to say. The course of the market price of the stock between now and next October, when the directors meet, will demonstrate how much truth there is in this information."

**New Hampshire Railroad Law.**—The law known as the Colby bill or general railroad law, which passed the New Hampshire Legislature last week, did not go to the Governor until this week, on account of a motion in the Senate to reconsider the final vote.

The bill providing for the establishment of a railroad commission similar to that of Massachusetts and the abolition of the old commission, has passed the Senate, and goes to the Governor. It is claimed by its opponents that some of the provisions of the bill are unconstitutional, and they ask the Governor to veto it.

**New York, Lake Erie & Western.**—This company makes the following statement for May and the eight months of its fiscal year from Oct. 1 to May 31, the figures including the earnings and expenses of leased lines:

	May—1883.	1882.	—Eight months—1883.	1882.
Earnings.....	\$2,055,988	\$1,681,798	\$13,439,154	\$12,645,472
Expenses.....	1,424,933	1,029,439	9,451,402	8,730,281
<b>Net earnings.....</b>	<b>\$631,055</b>	<b>\$652,359</b>	<b>\$3,987,692</b>	<b>\$3,915,191</b>

This shows for the eight months an increase of \$793,692, or 6.3 per cent., in gross earnings, which was accompanied by an increase of \$721,181, or 8.3 per cent., in expenses, the result being an increase of \$72,501, or 1.9 per cent., in net earnings. The expenses were 70.34 per cent. of gross earnings for the eight months this year, against 69.04 per cent. last year.

**New York & New England.**—The second track on this road is now in use from Boston to Blackstone, 37 miles. From Hartford east it is completed to Vernon, 12 miles. From Hartford west the grading for the second track is finished to Newington, 6 miles. Three construction trains are constantly employed in the work.

**New York, West Shore & Buffalo.**—Since the completion of this road to Albany the business has been chiefly in passengers, but on Sept. 11 the line was fully open for freight traffic between New York and all points on the Albany Division of this road and on the New York, Ontario & Western road. A freight station has been established in New York, and arrangements made for transfer across the river. The freight station at Weehawken is now ready for use.

The fourth boat for the ferry across the Hudson between Weehawken and New York was launched at Newburg last week. Two of the boats—the "Newburg" and "Kingston," are now ready for service, a third—the "Albany" is nearly finished, and the fourth—the "Oswego" will be finished next month. The boats all have iron hulls.

The contract for the passenger stations in Erie and Genesee



counties has been let to Peterson, Beckwith & Co., and the contract for the freight stations to a Syracuse firm. The contract for the passenger station in Buffalo will be let shortly.

**Northern Pacific.**—The last spike on the main line was driven Sept. 8, in accordance with previous arrangements, at a point now called Gold Spike, Montana, which is in the Hell Gate Valley, 66 miles west of Helena, 1,198 miles from Duluth and 1,220 miles from St. Paul. A gap of 1,200 ft. had been left here in the main line, and connection temporarily completed by a siding. The trains from the East and from the Pacific coast, with the numerous invited guests on board, met here on the afternoon of Sept. 8, after a delay caused by two or three slight accidents. At the point of meeting a temporary platform had been put up for the speakers, and about 3,000 persons were present, all brought by the trains, as there is no settlement at that point. The ceremonies began by an address from President Villard, who spoke as follows:

"We deemed it fit and proper to bid both the Old and the New World to this celebration, or, in other words, to arrange a sort of international festival. Thanks to the foresight of President Thomas Jefferson, well nigh four-score years ago, Lewis and Clark toiled through these mountains as the first explorers of Anglo-American origin, and lifted the veil that hid from civilized mankind the region watered by the Upper Missouri, the Yellowstone, the Columbia, and their tributaries.

"We are permitted to-day to behold a mighty task as all but finished. It was my proud privilege to exercise the chief direction over its latter stages. No light duty it was, but wearisome, and brain and nerve exhausting. Still, its very grandeur inspired the will and the power to perform it, and there was comfort and elevation in the thought that we have built what cannot perish, but will last to the end of all earthly things."

The principal oration of the day was then made by Hon. Wm. M. Everts, who spoke eloquently and at length. He was followed by the Secretary of the Interior and by Mr. Frederick Billings, formerly President of the company, who spoke at some length on its varied history and the success which had followed its earlier troubles. Short remarks were also made by the British and German Ministers, Dr. Kneiss, of the University of Berlin, and the Governors of Wisconsin, Minnesota, Oregon, Washington, Dakota and Montana, who were present. This part of the proceedings was then closed by a short address from Gen. Grant, who said that he was a Lieutenant and Acting Commissary when the first exploring expedition was sent out from Oregon into the country now traversed by the road.

The speaking being finished, two gangs of trackmen then proceeded to put down 1,200 ft. of track still incomplete, all the rails being laid in 13 minutes. President Villard then proceeded with much ceremony to drive the last spike, and the Northern Pacific road was formally pronounced complete.

The invited guests then dispersed, a majority of them returning home, although a party made up of foreign and American visitors continued on their trip to the Pacific coast in one of the special trains. The arrangements for the formal opening were, on the whole, carried out very successfully.

Three ex-presidents of the company—George W. Cass, C. B. Wright and Frederick Billings—were present at the ceremonies. The first President—J. Gregory Smith—was not there.

The work on the completion of the main line was resumed in the spring of 1879 on the west bank of the Missouri, and in the fall of that year at the junction of the Snake and Columbia rivers, the gap to be filled being then 1,222 miles. The 217 miles from the Missouri to the Yellowstone were completed in June, 1881, and the 225 miles from the Columbia to Lake Pend d'Oreille in November, 1881. The 340 miles through the Yellowstone Valley took 17 months to complete and the 194 miles through the gorges of Clark's Fork, from Pend d'Oreille to Missoula took 19 months. The remaining 246 miles, from the head of the Yellowstone Valley and from Missoula to the point of junction, have been built in the nine months of the present year. The Mullan Tunnel, near Helena, the most difficult piece of work on the line, still remains to be finished, and trains will use the temporary switch-back on the mountain at that point until it is completed.

Regular trains are now running over the National Park Branch, which leaves the main line at Livingston, Mont., and runs up the Yellowstone to Cinnabar, its length being 51.66 miles. There are five stations, Brisco, Chicory, Dailey, Sphinx and Cinnabar, located as nearly as possible 10 miles apart. The elevation at Livingston is 4,491 ft. and at Cinnabar 5,174 ft., the rise being only 683 ft., admitting of very moderate grades. Work on this branch was actively begun in April, under charge of Mr. J. B. Clough as Resident Engineer, assisted by T. C. Armitage and J. C. Isaac. The contractors were Winston Brothers & Clark.

**Ogdensburg & Lake Champlain.**—This company makes the following statement for the month of July:

	1881.	1882.	Inc. or Dec.	P. c.
Earnings.....	\$61,900	\$60,460	I. \$1,500	2.5
Expenses.....	42,300	46,700	D. 4,400	9.4
Net earnings.....	\$19,600	\$13,700	I. \$5,900	43.1

There has been a considerable reduction in expenses in nearly every month of the current fiscal year.

**Ohio Central.**—At the annual meeting, Sept. 12, four new directors were chosen, who are supposed to represent the bondholders. The statement shows that the net earnings for the year ending June 30 last were \$349,486, and the fixed charges \$790,980. The floating debt amounts to \$798,583.

The new board will, it is said, recommend to the bondholders a plan by which the coupons on the River Division first mortgage bonds shall be funded for five years, the car trust interest reduced from 8 to 6 per cent., and the payment of the principal deferred for three years; also that the stockholders be requested to pay an assessment of \$5 per share.

**Ohio River.**—Work is now well in progress on the clearing and grading of the section of 30 miles from Benwood, W. Va., southward.

**Pennsylvania.**—The Martin's Creek & Stroudsburg Co. has been organized to build the proposed branch from the Belvidere Division at Martin's Creek, N. J., to Stroudsburg, Pa., passing through the slate region of Northampton County.

This company has bought from the Wilmington & Northern road the right of way through Birdsboro, Pa., for the new line to Reading. The tracks of the new road will run close to the Wilmington & Northern track at this point.

It is reported that this company has secured possession of the old Union Canal from Reading, Pa., to Middletown, with its branch from near Lebanon to Pinegrove. It is said that the company will use the canal from Reading to Pinegrove as an extension of its new Reading Branch into the Schuylkill coal region.

It is said the work is to be begun at once on the extension

of the Southwest Pennsylvania Branch from Olyphant Furnace, Pa., southwest to the Monongahela River, and thence up that river into West Virginia. The extension would reach a large lumber district along the Monongahela and the Cheat rivers.

This week work is to be begun on the construction of a branch railroad which runs from this road at George's station, near Greensburg, and follows down the Crabtree Creek in the direction of New Alexandria, a distance of 8 miles. C. N. Stark & Bro., of Greensburg, Pa., have a contract for the construction of the first half of the road. The company is building the branch in order to tap a large tract of coal along the Crabtree and in the vicinity of New Alexandria. This coal property is in the hands of a company, and after the construction of the branch road, pits will be opened, coal works and coal ovens will be constructed.

**Pennsylvania, Slatington & New England.**—The President and several of the directors of this company have tendered their resignations, in order, it is said, to make room for capitalists who will put money enough into the enterprise to complete the road. It does not appear, however, that these capitalists have been found; at any rate they have not yet come forward.

**Pittsburgh, McKeesport & Youghiogheny.**—On Sept. 1 this road was formally transferred to the Pittsburgh & Lake Erie Co., and will be operated by that company as its Youghiogheny Division. The road, as now completed, extends from the junction with the Pittsburgh & Lake Erie road in Pittsburgh, south by east to New Haven in the Connellsville coke district, a distance of 58 miles. It follows the course of the Youghiogheny River and is generally parallel and close to the Pittsburgh Division of the Baltimore & Ohio. It is to be used as the Pittsburgh end of the South Pennsylvania road from Harrisburg to Pittsburgh. It is expected to secure a share of the large and valuable traffic in coke and coal of the country through which it passes.

**Richmond & Danville.**—The following circular has been issued to the stockholders, signed by W. F. Clyde, George I. Seney, C. S. Brice, George S. Scott and George F. Barker:

"The undersigned, members of the board of directors, comprising the Executive Committee, and owning and representing more than a majority of the capital stock of the company, ask proxies for general meeting of stockholders. We shall oppose the proposed issue of additional stock, believing the assets of company under vigorous economical management sufficient to protect and develop its valuable growing properties. We propose to elect and confirm at this meeting the following board of directors to manage affairs until the annual meeting in December next: George S. Scott, George I. Seney, H. C. Fahnestock, Samuel E. Thomas, C. S. Brice, George F. Barker, John McAnerney and William P. Clyde."

A dispatch from Richmond, Va., Sept. 12, says: "At the general meeting of the stockholders of the Richmond & Danville Railroad Co. held here to-day a proposition to increase the capital stock of the company from \$5,000,000 to \$7,000,000 was unanimously defeated. The promoters of the scheme, it is stated, did not appear. On the motion of Mr. George S. Scott, of New York, who stated that he held three-fifths of the whole Danville stock and represented a majority, John A. Rutherford, M. B. Brown, and R. Baring Gould, all of New York, were displaced as directors of the company, and H. C. Fahnestock, Gen. Samuel Thomas, and John McAnerney were elected as their successors."

"Mr. George S. Foster, a lawyer of New York, who represented the interest of Mr. Rutherford, inquired whether these removals did not have reference to obstructing a report made by the displaced directors to the Danville board recently recommending a suit against W. P. Clyde, F. M. Logan and Joseph Bryan, as directors of the West Point Terminal Co., to recover so much of \$987,000 as was lost by them as a committee of the Terminal board in sustaining the stock in New York. Mr. Scott declared that if the Danville Co. owed that money the new board would see that the rights of its stockholders were protected. In reply to a resolution submitted by Mr. Foster, instructing the directors of the Danville to report why this suit has not been brought, John McAnerney, of New York, gave a history of how the losses had been sustained. He explained that in the great fall of the stock of the Danville Co. in February, 1882, they had to keep up the stock of the latter company. All these facts, Mr. McAnerney declared, were known to Mr. Rutherford 12 months ago. Having lost control of the road now, their action in the matter was directed against Mr. Clyde, who was conspicuous in securing control of the company. Mr. Beames, of New York, offered a resolution directing a sweeping investigation into the affairs of the Danville road and all of its subordinate properties. This contemplated an examination of the books of all of these corporations from 1880 up to the present day. It seemed to contemplate especially an inquiry as to what, if any, officers or directors of these roads had engaged in stock speculations. The resolutions were referred to the directors. Members of the West Point Terminal directory declare that the losses in sustaining that stock in the market were not nearly so great as claimed."

"The representatives of those controlling a majority of the stock of the Danville now deny the report that any pool has been formed by them to prevent any of their stock being sold under five years. They assert that any one is free to sell his stock at pleasure. They have agreed among themselves to operate the road in a business-like way and to develop the property. It is stated emphatically that none of the present officers of the Danville will be removed."

**Richester & Pittsburgh.**—The \$1,400,000 consolidated bonds offered by this company last week have been taken at 90 and accrued interest. Bids were received for about \$1,900,000 at from 85 to 90 and interest.

**Rome & Boonville.**—This company has been organized to build a railroad from Rome, N. Y., northward to Boonville on the Utica & Black River road, a distance of about 23 miles. The people on the line are asked to give the right of way and subscribe to the stock.

**Rome, Watertown & Ogdensburg.**—This company makes the following statement for the month of July:

	1881.	1882.	Inc. or Dec.	P. c.
Earnings.....	\$141,956	\$148,287	D. \$6,331	4.3
Expenses.....	90,278	114,078	D. 23,800	26.9

Net earnings..... \$51,678 \$34,209 I. \$17,469 51.1

By the close of the present season 10,000 tons of steel rails will have been used in renewals, that amount having been bought this year. Contracts have been made for 500 new freight cars.

Amicable settlements have been made with most of the persons injured in the Carlyon accident. It is now believed that \$100,000 will cover the total loss resulting to the company from that accident.

**St. Paul, Minneapolis & Manitoba.**—On the afternoon of Sept. 4 the bridge over the Mississippi at Minneapolis, Minn., caught fire from sparks thrown out by a locomotive, and two spans were entirely destroyed, causing a loss of \$30,000, besides considerable delay to business.

**Saugatuck & Aspetuck Valley.**—Arrangements are being made to organize a company for the purpose of building a local road from Westport, Conn., northward through the Saugatuck and Aspetuck valleys to Redding and Newtown, about 20 miles.

**Southeastern, of Canada.**—The representatives of Martin-Chapman syndicate claim that they are still negotiating the purchase of Mr. Barlow's interest in this road, and that they will buy it, provided satisfactory arrangements can be made with his creditors. Nothing further of importance has transpired with regard to the purchase, and it may safely be said that no sale has been made as yet.

The Passumpsic Co. has taken out at Montreal a writ of seizure before judgments to enforce a claim of \$150,000 against the Southeastern Co. This action is taken to secure the company in the event of a sale of the property.

**Southern Pacific.**—A dispatch from Washington, Sept. 6, says: "Judge Payson filed his argument in the Interior Department to-day in answer to the application of the Southern Pacific Railroad for the appointment of government commissioners to report upon the part of the road between El Paso and Yuma. Judge Payson assumes that if the Secretary of the Interior, or the President, appoint a commissioner, he will thereby waive all questions of law and fact, and be compelled to perform other executive duties prescribed by the act to incorporate the Texas & Pacific road, including that of issuing patents to lands granted. Judge Payson argues that the consolidation of the Texas & Pacific with the Southern Pacific was with a competing line, and that the latter is not in law the successor of the Texas & Pacific, and therefore not entitled to a grant of public land conferred upon that company. Judge Payson dwells on the fact that the Southern Pacific lines are leased to the Central Pacific at high rates, thus nullifying the interest of Congress in making a grant of land for the road by the southern route to provide a competing railroad line across the continent. He also intimates that these leased lines are a burden to the Central Pacific, and to a considerable extent reduce payments to its sinking fund under the Thurman act."

A dispatch from Concord, N. H., Sept. 12, says: "The Senate Judiciary Committee has under consideration a bill incorporating what is to be called the Southern Pacific Co., by the provisions of which any railroad or steamboat lines or lands in the United States may be purchased by the company, with the right to increase the capital stock to an unlimited extent by a vote of the parties in interest. The incorporators named are Thomas W. Pierce, Charles Crocker, M. F. S. Hopkins, and Isaac E. Gates, attorney for Gov. Stanford, who are said to control the California system. Mr. Pierce, who testified before the Committee, stated that it was proposed, if the bill became law, to consolidate the Louisiana Western, the Texas & New Orleans, the Galveston, Harrisburg & San Antonio, the Houston & Texas Central and other railroads, as well as steamboat lines, having an aggregate capital of upward of \$50,000,000, besides owning 6,000,000 acres of land in Texas."

**Syracuse, Ontario & New York.**—This company has been organized by the parties who bought the Syracuse, Chenango & New York road at the recent foreclosure sale. The New York, West Shore & Buffalo Co. entirely controls the new organization.

**Toledo, Ann Arbor & Grand Trunk.**—This company has brought a sufficient quantity of 65-lbs. steel rails to replace the 56-lbs. iron rails now in use for 2½ miles out of Toledo, and these rails will be laid next month. The work of replacing the iron rails with steel will be continued as fast as possible.

**Toledo, Cincinnati & St. Louis.**—The effort to secure action on the part of the Iron Division bondholders for a separate foreclosure of their mortgage has not been successful. It is probable, however, that an application will be made to the Court to have the net earnings of that division set aside to pay the interest on its bonds. The application of the Cincinnati Northern bondholders for a separate foreclosure will come up before the Court on Sept. 17. On Sept. 20 the Receiver will have a hearing in relation to certain leases of equipment.

**Troy & Greenfield.**—The Boston *Advertiser* of Sept. 12 says: "The return for August made the State Auditor by the Manager of the Hoosac tunnel and state road is the most encouraging made for many years, showing for the first time an amount paid into the treasury really in excess of the amount drawn out, and this in spite of the fact that two-thirds of the expenditures were on construction account. The expenditures for August were \$40,755, of which \$25,981 were for double track. The returns for the nine months of the present fiscal year show a steady increase in earnings, and it is confidently predicted that as soon as the double-tracking is completed the tunnel will net the state an average of \$20,000 a month, which within a year will increase to \$40,000. The expenditures and receipts in detail for the nine months are as follows:

	Receipts.	Payments.	Surplus or def.
December.....	\$20,465	\$39,800	D. \$19,335
January.....	24,339	50,091	D. 25,752
February.....	17,375	28,745	D. 11,370
March.....	23,730	26,432	D. 2,702
April.....	13,863	35,450	D. 21,587
May.....	36,048	25,120	S. 11,928
June.....	23,394	38,811	D. 15,417
July.....	28,083	60,605	D. 32,522
August.....	42,109	40,755	S. 1,354

Total..... \$29,976 \$346,418 D. \$116,442

"The increased receipts for May were due to the collection of debts long outstanding."

**Union Pacific.**—Surveys are in progress for a branch of this company's Utah & Northern line from Bear Cañon, Idaho, to the eastern boundary of the Yellowstone National Park. The distance is about 75 miles.

**Western Union Telegraph.**—The following statement is made for the quarter ending Sept. 30, the September earnings being estimated:

Balance from previous quarter.....	\$3,658,566
Net earnings for the quarter.....	1,650,000
Total.....	\$5,308,566
Interest on bonds and sinking fund.....	126,700

Surplus.....\$5,181,866

It was resolved to declare the usual quarterly dividend of 1½ per cent., which will require \$1,390,779, leaving a balance of \$3,791,087 on hand.

The full returns for the quarter ended June 30 complete the figures of traffic for the fiscal year, showing gross revenues for the year ended June 30, \$19,454,903; expenses, \$11,794,553, and net profits, \$7,660,350, being an increase over the previous year of \$2,340,737 in gross revenues, and of \$542,280 in net profits.

**Winona, Alma & Northern.**—This company has filed articles of incorporation to build a railroad from Winona, Minn., northeast to Alma, Wis., and thence north to Menominee, about 70 miles in all.